Washtenaw Community College

2013-2014 College Catalog

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Institutional Accreditation

Washtenaw Community College is accredited by
The Higher Learning Commission of the North Central Association
230 South LaSalle Street, Suite 7-500
Chicago, Illinois 60604-1413
(800) 621-7440   www.ncahigherlearningcommission.org

Children's Center is accredited by
NAEYC Academy for Early Childhood Program Accreditation
1313 L Street N.W., Suite 500
Washington, DC 20005
(202) 232-8777; (800) 424-2460   www.naeyc.org/accreditation

Program Accreditations & Approvals

Automotive Mechanic, Collision Repair Certificates
Automotive Technician, Collision Repair Refinish Technician and Collision Repair Technician Advanced Certificates
Certified by National Automotive Technicians Education Foundation
101 Blue Seal Drive, Suite 101
Leesburg, VA 20175
(703) 669-6650   www.natef.org

Culinary and Hospitality Management, Baking and Pastry AAS Degrees,
Culinary Arts Certificate, Hospitality Management, and Baking and Pastry Certificates
Accredited by American Culinary Federation
180 Center Place Way
St. Augustine, FL 32095
(800) 624-9458   www.acfchefs.org

Dental Assisting Certificate
Certified by The Commission on Dental Accreditation of The American Dental Association
211 E. Chicago Avenue, Suite 1900
Chicago, IL 60611-2678
(312) 440-2500   www.ada.org

Heating, Ventilation, Air Conditioning and Refrigeration (HVACR)
HVACR – Residential Certificate
HVACR – Commercial, HVACR – Industrial Advanced Certificates
HVAC Associate in Applied Science
Accredited by HVAC Excellence
1701 Pennsylvania Ave., N.W.
Washington, D.C. 20006
800-394-5268   www.hvacexcellence.org

Law Enforcement Basic Police Academy
Approved by The Michigan Commission on Law Enforcement Standards
106 W. Allegan Street, Suite 600
Lansing, MI 48933
(517) 322-1417   www.mcoles.org

Registered Nursing AAS Degree
Accredited by the Accreditation Commission for Education in Nursing (ACEN)
3343 Peachtree Road NE, Suite 850
Atlanta, GA 30326
Phone: (404) 975-5000 Fax: (404) 975-5020   www.nlnac.org

Registered Nursing AAS Degree cont.

And approved by State of Michigan
Department of Licensing and Regulatory Affairs
Bureau of Health Professions - Board of Nursing
611 W. Ottawa P.O. 30670
Lansing, MI 48909
(517) 335-0918   www.michigan.gov

Pharmacy Technology Certificate
Accredited by The American Society of Health-System Pharmacists
7272 Wisconsin Avenue
Bethesda, MD 20814
(301) 657-3000   www.ashp.org

Physical Therapist Assistant AAS Degree Program
Accredited by Commission on Accreditation in Physical Therapy Education (CAPTE) of the American Physical
Therapy Association
1111 North Fairfax Street
 Alexandria, Virginia 22314
(703) 706-3245   accreditation@apta.org   www.capteonline.org.

Radiography AAS Degree
Accredited by the Joint Review Committee on Education in Radiologic Technology
20 North Wacker Drive, Suite 2850
Chicago, IL 60606-3182
(312) 704-5300   www.jrcert.org

Degrees and Certificates Awarded

Associate Degrees

Washtenaw Community College offers three associate degrees that are assigned based on a program's primary
purpose and the minimum level of prescribed general education requirements. The degree title and specific program
title will appear on the diploma. The degrees and their purposes are as follows:

Associate in Arts (AA)

The Associate in Arts is a transfer degree, used primarily by humanities and social science programs.
Additionally, some transfer programs in health, technology and business use the AA degree title. AA degrees
require between 60 and 66 credit hours to complete.

Associate in Science (AS)

The Associate in Science degree is primarily used by transfer programs that have significant math and science
requirements. It requires a minimum of 60 credit hours.

Associate in Applied Science (AAS)

The Associate in Applied Science is the standard career-entry degree. It is used for programs that prepare
students for careers in health, business and technology. Ranging between 60 and 72 credit hours, this degree has
dual use for some programs that are primarily career entry but also have articulation agreements with specific
bachelor's degree programs.

Certificates

The College offers three types of certificates that are designed to meet a variety of student needs ranging from
preparation for entry-level jobs to advanced job skills for those who are already in the work force. Certificates can
also form the foundation for an associate degree. The certificate titles and their purposes are as follows:

Certificate of Completion

The Certificate of Completion is used for short-term programs covering a discrete body of skills and/or knowledge that is intended to prepare students for a specific entry-level occupation or basic literacy attainment. The Certificate of Completion can be credit or noncredit, but is limited to a maximum of 8 credit hours.

Certificate

The Certificate is awarded for standard credit programs that normally take two semesters to complete and range from 9 to 36 credit hours. Primarily used to prepare students for entry-level occupations, the certificate also may be used to prepare students for an advanced certificate. Certificates also may form the basis for an associate degree.

Advanced Certificate

The Advanced Certificate is for students who are pursuing advanced study in an occupational area. These may be short-term or longer programs that require completion of a certificate or equivalent industry experience for admission. Some advanced certificates prepare students for industry certification exams. The Advanced Certificate, ranging from 9 to 36 credit hours, may be added to a Certificate to form the basis for an associate degree.

Post-Associate Certificate

This certificate is for post-associate's degree programs for students who are pursuing advanced study in an occupational area. These may be short-term or longer with the focus on study beyond the degree level and range from 6 to 36 credit hours.

Discontinuation of Degrees and Certificates

Washtenaw Community College's policy is to phase out discontinued programs over a period of three years. Students following programs that were discontinued are urged to see a program advisor to determine whether it is possible to complete their programs or, if it is necessary, to change to a new program. Students will be advised on making course substitutions and, if necessary, on selecting a new program. For more information, refer to **Graduation Requirements** in the **Academic Policies/Procedures** section of this Bulletin.

General Education Graduation Requirements

Philosophy Statement

General Education is highly valued at Washtenaw Community College because it develops and nurtures certain habits of mind that reach beyond a student's area of academic emphasis and enables the student to meet critically, objectively and successfully the challenges of education, work and life. By requiring a strong core of common learning, the College demonstrates its commitment to providing a broad-based education to all degree recipients, which includes useful skills, knowledge and experiences to support a variety of lifelong endeavors. To this end, it shall be the policy of the College to maintain a substantial program of general education to be included in all degree programs. The College defines general education as a prescribed curriculum that assures a broad acquaintance with the basic areas of academic study. The general education requirements are designed to provide degree students certain skills and knowledge that include an understanding of and appreciation for the important modes of human thought, communication and inquiry.

General Education Course Requirements

Students pursuing associate degrees are required to meet the general education requirements in the eight areas listed below. The content areas are generally met through course distribution requirements (successfully completing courses from restricted distribution lists). Critical thinking is incorporated into the courses in the other areas and does not require any additional coursework.

Writing – Develop, organize, and express thoughts in writing using Standard English.
    Student Learning Outcomes
1. Write at least a three-paragraph, connected composition that is clear, organized, complete and appropriate to the intended audience.
2. Respond to an idea in a thorough, logical and credible manner.
3. Provide support for statements and/or opinions.
4. Write without grammatical or mechanical errors.

Speech – Speak in an organized and effective manner and listen critically and with comprehension.
>   **Student Learning Outcomes**
>   1. Prepare and deliver a researched, organized and purposeful speech.
>   2. Speak clearly, succinctly and appropriately before an audience.
>   3. Demonstrate critical and comprehensive listening through evaluating messages conveyed by others.

Mathematics – Understand the applications and perform computations using the concepts of college-level mathematics.
>   **Student Learning Outcomes**
>   1. Demonstrate the ability to interpret and draw inferences from mathematical models such as formulas, graphs, tables and/or schematics.
>   2. Demonstrate the ability to represent mathematical information symbolically, visually, numerically and/or verbally.
>   3. Demonstrate the ability to employ quantitative methods such as arithmetic, algebra, geometry or statistics to solve problems.
>   4. Demonstrate the ability to estimate and check mathematical results for reasonableness.

Natural Science – Understand principles and applications of modern science.
>   **Student Learning Outcomes**
>   1. Use the scientific method to propose and test hypotheses through interpretation of experimental data.
>   2. Make inferences based on observations and results.
>   3. Apply the fundamental concepts of one of the natural sciences to interpret observations and experimental data.

Social and Behavioral Science – Understand principles and applications of social and behavioral sciences in exploring the dynamics of human behavior.
>   **Student Learning Outcomes**
>   1. Develop a greater awareness of their civic responsibilities
>   2. Exhibit a greater degree of extracurricular engagement with social, political and economic issues.
>   3. Recognize and apply psychological and sociological perspectives to the understanding of human behavior.
>   4. Distinguish between non-scientific approaches to attaining knowledge (anecdotal evidence, rumors and common sense) as compared with scientific approaches (theory-driven methods based on empirically based data).
>   5. Recognize that human behavior is a function of the dynamic interplay of factors at both the micro and macro level.

Arts and Humanities – Understand and apply information related to the nature and variety of the human experience through personal and cultural enrichment.
>   **Student Learning Outcomes**
>   1. Identify the work presented and identify the method, technique and/or concept utilized in the work.
>   2. Evaluate and/or apply the works, methods, techniques and/or concepts of the visual/performing arts and/or humanities.

Critical Thinking – Demonstrate skill in analyzing, synthesizing and evaluating.
>   **Student Learning Outcomes**
>   1. Categorize information or separate information into component parts.
>   2. Recognize discrete elements of information as being related (for instance by subject or relevance to the task at hand).
>   3. Identify which information is relevant to the solution of a problem.

Computer and Information Literacy – Demonstrate the skill to use computer information systems including using software and the ability to locate, retrieve and evaluate networked information.
>   **Student Learning Outcomes**
>   1. Use computer software to perform basic tasks.
>   2. Identify concepts related to computer technology and its use.
>   3. Identify criteria for evaluating online information and its legal and ethical use.

Course Distribution Requirements

Associate degree students must complete courses from each of the General Education areas as described below. The requirements vary, depending on which degree is being earned. The chart below lists the number of general education credit hours required for each degree.

	AA	AS	AAS
Writing	6-7 credits	6-7 credits	3-4 credits
Speech	3 credits	3 credits	3 credits
Mathematics	3-4 credits	3-4 credits	3-4 credits
Natural Science	4 credits	4 credits	3-4 credits
Social and Behavioral Science	6 credits	6 credits	3 credits
Arts and Humanities.	6 credits	6 credits	3 credits
Critical Thinking[1]	0 credits	0 credits	0 credits
Computer and Information Literacy[2]	3 credits	3 credits	3 credits
Total Credit Hours	31-33 credits	31-33 credits	21-24 credits

[1] *Critical thinking skills will be taught in all courses included in the other course distribution areas*
[2] *Due to the computer intensive nature of many courses, students are encouraged to complete the Computer and Information Literacy requirement as early in their academic career as possible.*

Students who have earned a bachelor's degree or higher from an accredited U.S. college or Univ. may request a waiver of the general education requirements from the Student Connection. The following exceptions may apply:
1. The waiver may not apply if some or all of your general education coursework was transferred from an unaccredited institution to the accredited institution that awarded your bachelor's degree.
2. The General Education Math and Science requirements are not waived if the bachelor's degree does not contain math and/or science coursework.
3. The General Education Computer and Information Literacy requirement is not waived if the student did not complete the equivalent of WCC's computer literacy course.
4. Specific general education courses may still be required to fulfill the program requirements.

Approved Courses for General Education Distribution Areas

The following courses are approved for General Education in the Writing, Speech, Mathematics, Natural Sciences, Social and Behavioral Sciences, Arts and Humanities, and Computer Information Literacy areas. Some courses are limited to a specific degree or program; <u>check the footnotes when selecting courses</u>. Students also should check the requirements for their programs to determine if specific courses are required or recommended.

Writing
ENG 100[1]	Introduction to Technical and Workplace Writing	4
ENG 107[1]	Technical Writing I	3
ENG 111	Composition I	4
ENG 226	Composition II	3

[1] *May be used for the AAS degree only.*

Speech
COM 101	Fundamentals of Speaking	3
COM 102	Interpersonal Communication	3
COM 142	Oral Interpretation of Literature	3
COM 183	Persuasion	3
COM 200	Family Communication	3
COM 210	Nonverbal Communication	3

Speech Cont.
COM 225*	Intercultural Communication	3

* *See the EMU Diverse World Requirement list.*

Mathematics
Any 100-level or higher MTH course, with the exception of the following courses, which apply to only the programs or degrees specified:

MTH 148[2]	Functional Math for Elementary School Teachers I	4
MTH 149[2]	Functional Math for Elementary School Teachers II	4
MTH 151[1]	Technical Algebra	4
MTH 157[1]	Geometry and Trigonometry	3
MTH 167[3]	Math Applications for Health Science	3

[1] *May be used for the AAS degree only.*
[2] *For students following an elementary or early childhood education track only.*
[3] *For students in Health Programs only.*

Natural Sciences
Any 100-level or higher, 3 credit hour or more course in the following disciplines, with the exceptions noted below:
Astronomy (AST), Biology (BIO), Chemistry (CEM), Environmental Science (ENV*), Geology (GLG), Physics (PHY) *   * See the EMU Diverse World Requirement list*

The following courses apply only to the programs specified:

CEM 102[2]	Chemistry for Elementary Teachers	4
GLG 202[2]	Earth Science for Elementary Teachers	4
PHY 100[2]	Physics for Elementary Teachers	4
PHY 110[1]	Applied Physics	4
SCI 101[1]	The Nature of Science	3
SCI 102[3]	Applied Science	3

[1] *May be used for the AAS degree only.*
[2] *For students following an elementary or early childhood education track only.*
[3] *For United Association students only.*

Social and Behavioral Science
Any 100-level or higher, 3 credit hour or more course in the following disciplines:
Anthropology (ANT*),
Economics (ECO*)
Geography (GEO*),
History (HST*),
Political Science (PLS*),
Psychology (PSY*)
Sociology (SOC*)
* See the EMU Diverse World Requirement list.*

Arts and Humanities
Any 100-level or higher, 3 credit hour or more course in the following disciplines:
Arabic (ARB), French (FRN[1)]), German (GRM[1]), Philosophy (PHL) Spanish (SPN[1)])
[1]*All "Conversational" courses, such as SPN 101 Beginning Conversational Spanish I, are excluded and may not be used to meet the Arts and Humanities requirement.*

Or, any course listed below:

ART 130	Art Appreciation	3
ART 131	Art Appreciation through Art Museum Experiences	3
ART 143*	African American Art and Culture	3
ART 150*	Monuments from Around the World	3
COM 130	Introduction to Mass Communication	3
DAN 180*	Dance Appreciation: The World of Dance	3
DRA 152	Acting for the Theatre I	3
DRA 208	Acting for the Theatre II	3
ENG 140	Horror and Science Fiction	3
ENG 160	Introduction to Literature: Poetry and Drama	3
ENG 170	Introduction to Literature: Short Story and Novel	3
ENG 181*	African American Literature	3
ENG 200	Shakespeare	3

ENG 211	American Literature I	3
ENG 212	English Literature I	3
ENG 213*	World Literature I	3
ENG 214*	Literature of the Non-Western World	3
ENG 222	American Literature II	3
ENG 223	English Literature II	3
ENG 224*	World Literature II	3
ENG 240	Children's Literature	3
ENG 242*	Multicultural Literature for Youth	3
ENG 260	Journal Workshop I	3
ENG 261	Journal Workshop II	3
ENG 270	Creative Writing I	3
ENG 271	Creative Writing II	3
GDT 101	History of Graphic Design	3
HUM 101	Humanities I – Ancient to Medieval Times	3
HUM 102	Humanities II – Renaissance to Modern Times	3
HUM 103	Introduction to Humanities – 20th Century	3
HUM 120	Introduction Film	3
HUM 145*	Comparative Religions	3
HUM 146	Mythology	3
HUM 150*	International Cinema	3
HUM 160	American Film	3
HUM 175*	Arts and Cultures of Middle East (3000 BCE-1800 CE)	3
HUM 185	The Horror Film	3
MUS 140	Music Theory I	3
MUS 142	Music Theory II	3
MUS 180*	Music Appreciation: Our Musical World	3
MUS 185	Western Music History Survey	3
PHO 103	History of Photography	3

Computer and Information Literacy

ANI 150	3D Animation I: Modeling	4
ANI 155	Textures and Studio Lighting for Animation	4
ANI 160	Fundamentals of Movement and Animation	4
ANI 250	3D Animation II	4
ANI 260	3D Animation III	4
BOS 106	Electronic Planning, Sharing and Organization	3
BOS 107	Office Administration I	4
BOS 157	Word Processing and Document Formatting I	3
BOS 175	Medical Office Communication	2
BOS 182	Database Software Applications	3
BOS 184	Spreadsheet Software Applications I	3
BOS 185	Medical Computer Skills and Electronic Health Records	3
BOS 208	Desktop Publishing for the Office	3
BOS 210	Medical Transcription	3
BOS 211	Introduction to Paralegal Studies	3
BOS 223	Medical Office Procedures	3
BOS 224	Medical Office Insurance and Billing	4
BOS 225	Integrated Office Applications	3
BOS 230	Electronic Forms Design	3
BOS 250	Office Administration	4
BOS 257	Word Processing and Document Formatting II	3
BOS 284	Spreadsheet Software Applications II	3
CIS 100	Introduction to Computer Productivity Apps	3
CIS 110	Introduction to Computer Information Systems	3
CIS 121	Linux/UNIX I: Fundamentals	3
CIS 206	Linux/UNIX II: Basic System Admin, Networking, and Security	3
CIS 208	Linux/UNIX III: Intermediate Sys Admin, Networking, and Security	3
CIS 221	Linux/UNIX Programming and Scripting I	3
CIS 222	Linux/UNIX Programming and Scripting II	3

CIS 282	Relational Database Concepts and Application	3
CIS 288	Systems Analysis and Design	3
CNT 201	Administering Microsoft Windows Client Operating Systems	3
CNT 206	Internetworking I - Fundamentals	4
CNT 211	Installing and Configuring Windows Server 2012	4
CNT 216	Internetworking II - Routers	4
CNT 217	CCNA Security Certification	4
CNT 223	Administering Windows Server 2012	4
CNT 224	Configuring Advanced Windows Server 2012 Services	4
CNT 226	Internetworking III - Switches	4
CNT 236	Internetworking IV - WANs	4
CNT 237	Health Information Networking	4
CNT 241	Microsoft Exchange Server Administration	4
CNT 251	Designing Windows Server Security	4
CPS 112	Game Development for Beginners	4
CPS 120	Introduction to Computer Science	3
CPS 161	An Introduction to Programming with Java	4
CPS 171	Introduction to Programming with C++	4
CPS 251	Android Programming Using Java	4
CPS 261	Advanced Java Concepts	4
CPS 271	Object Features of C++	4
CPS 272	Data Structures with C++	4
CPS 276	Web Programming Using Apache, MySQL, and PHP	4
CPS 278	Java Server Programming	4
CPS 293	C# .NET	4
CPS 295	Advanced C#.Net and ASP.Net	4
CSS 180	Computer Security I	4
CSS 200	Computer Security II	4
CSS 205	Computer Security III	4
CSS 210	Computer Security IV	4
CSS 212	Computer Security V	4
CSS 215	Managing Network Security II	4
CSS 220	Computer Security VI	4
CSS 270	Computer Security VII	4
CSS 275	Computer Security IX	4
CST 150	Computer Systems Technology I	5
CST 155	Computer Systems Technology II	5
CST 160	Computer Technology I	4
CST 165	Computer Technology II	4
CST 225	PC Networking	3
CST 270	Data Recovery and Analysis	4
GDT 100	Typography I	4
GDT 104	Introduction to Graphic Design	4
GDT 105	Introduction to Mac Graphics	3
GDT 106	Illustrator Graphics	3
GDT 107	InDesign	3
GDT 108	Photoshop Graphics	3
GDT 112	Principles and Problem Solving in Graphic Design	4
GDT 150	Design for the Internet	4
GDT 151	Screen Printing	4
GDT 214	Advanced Photoshop	3
GDT 215	Typography II	3
GDT 220	Publication Design	4
GDT 239	Imaging and Illustration	4
GDT 245	Digital Painting	4
GDT 252	Advanced Digital Studio	4
GDT 259	Graphic Communication II	4
GDT 290	Professional Practices	4
INP 140	Building a Web Site	3
INP 150	Web Coding I	3

INP 153	Designing User Experience I	3
INP 154	Interaction Design I	4
INP 170	Web Coding II	3
INP 176	Web Animation I	3
INP 182	Web Graphics II	3
INP 203	Designing User Experience II	3
INP 233	Web Analytics and SEO	3
INP 253	Designing User Experience III	3
INP 254	Interaction Design II	4
INP 261	Introduction to Web Programming	3
INP 271	Client-Side Web Programming	3
INP 275	Web Database	3
INP 276	Mobile Web Development	4
INP 281	Server-Side Web Programming	3
INP 284	Web Graphics IV	4
INP 291	Programming with HTML5 and CSS3	3
NCT 121	Manual Programming and NC Tool Operation	4
NCT 221	Advanced Manual Programming and NC Tool Operation	4
NCT 249	CAD/CAM CNC Programming	4
ROB 212	Robotics II	4
ROB 223	Robotics III	2
VID 105	Foundations in Digital Video I	4
VID 125	Foundations in Digital Video II	4

EMU Diverse World Requirement
** For WCC students who complete these courses prior to being admitted to EMU, the following courses
    should meet EMU's Diverse World Requirement.*

ART 143	ENG 213	HST 150	HUM 150
ART 150	ENG 214	HST 210	HUM 170
ANT 201	ENG 224	HST 230	HUM 175
COM 225	ENG 242	HST 235	MUS 180
DAN 180	ENV 101	HST 240	PLS 211
ECO 280	GEO 101	HST 270	PSY 107
ENG 181	HST 123	HUM 145	SOC 205

Articulation Agreements

Many WCC programs have articulation agreements with other colleges and universities that allow students to transfer courses to a bachelor's degree program without loss of credit. Articulation agreements for specific programs are listed with that program. Some articulation agreements apply to multiple programs or are available to students completing any associate degree at Washtenaw Community College.

Most articulation agreements are designed to meet MACRAO requirements and should be followed carefully so as not to lose these benefits. If a program meets MACRAO, it will be noted in the articulation agreement. Copies of articulation agreements can be obtained in the counseling office or online at
http://www.wccnet.edu/departments/curriculum/articulation.php?levelone=colleges.

MACRAO Transfer Agreement

The Michigan Association of Collegiate Registrars and Admissions Officers (MACRAO) developed an agreement to facilitate transfer from Michigan Community Colleges to baccalaureate colleges and universities. The agreement provides for transfer of up to 30 semester credit hours to meet many (in some cases all) of the general education requirements at participating Michigan four-year schools. Students should check with the college to which they plan to transfer to determine if the MACRAO agreement is honored or if the college puts limitations or provisos on the agreement. Please see *www.macrao.org* for additional information.

How the Agreement Works
The MACRAO Transfer Agreement stipulates that 30 semester credit hours of 100-level and above, compatible, college-level coursework transcripted at one Michigan Community College will transfer to another Michigan college or Univ., and be applied toward meeting the student's general education requirements at the "transferred to" institution. A complete listing of course and credit hour requirements is included here. The institution offering the courses (the college in which a student begins) determines the specific courses in each category. In order to get the MACRAO certification from WCC, students need to have earned 25% of their total MACRAO credit hours at WCC (approximately 8 credit hours) and must have earned a minimum 2.0 GPA in each of the 4 areas: English Composition, Social Science, Science and Math and Humanities. Once students have completed the course requirements for meeting MACRAO, they must call 734-973-3658 or 734-973-3546 to request that their transcripts be certified as "MACRAO Agreement Satisfied." This service must be requested before a transcript is sent to a transfer college.

The Colleges and Universities listed below accept the MACRAO transfer agreement

Albion College*	Michigan Technological University*
Aquinas College*	Northern Michigan Univ.*
Concordia Univ.-Ann Arbor*	Northwood University*
Davenport Univ.*	Oakland Univ.*
Eastern Michigan Univ.*	Rochester College*
Ferris State Univ.*	Sacred Heart Seminary*
Grand Valley State Univ.*	Saginaw Valley State Univ.*
Henry Ford Community College*	Schoolcraft College*
Kirtland Community College*	Siena Heights Univ.*
Lake Superior State University*	Southwestern Michigan College*
Macomb Community College*	Spring Arbor Univ.*
Madonna University*	Wayne County Community College District*
Marygrove College*	Wayne State Univ.*
Michigan State University*	Western Michigan University*

* These colleges have provisos on their MACRAO agreements as described on
http://www.macrao.org/Publications/MACRAOAgreement.asp as of June 2013.

MACRAO Transfer Requirements

Note: Some MACRAO-approved courses do not meet WCC General Education requirements. Check the previous pages for approved General Education courses. ==*Courses that* **do not** *meet WCC General Education requirements are in* **bold and highlighted** *below.*==

I. English Composition   **(6 credits)**
Composition (ENG)   111, 226

II. Social Science   **(8-9 Credits in more than one discipline)**
Anthropology (ANT)   201, 202, 205
Economics (ECO)   110, 211, 222, 280
Geography (GEO)   101
History (HST)   121, 122, 123, 150, 200, 201, 202, 210, 215, 216, 220, 230, 235, 240, 251, 260, 270
Political Science (PLS)   112, 150, 211, 220, 250, 260
Psychology (PSY)   100, 107, 117, 150, 200, 206, 210, 220, 240, 251, 257, 260
Sociology (SOC)   100, 155, 202, 205, 207, 220, 225, 230, 250

III. Science and Math (8-9 Credits in more than one discipline; one course must be a laboratory course; laboratory courses are underlined.)
Astronomy (AST)   100, 111
Biology (BIO)   <u>101</u>, <u>102</u>, <u>104</u>, 107, <u>109</u>, 110, <u>111</u>, <u>142</u>, <u>161</u>, <u>162</u>, 200, <u>201</u>, 208, 212, <u>215</u>, <u>225</u>, <u>227</u>, <u>228</u>, <u>237</u>
Chemistry (CEM)   <u>102</u>*, <u>105</u>, <u>111</u>, <u>122</u>, <u>140</u>, <u>211</u>, <u>222</u>
Environmental Science (ENV)   <u>101</u>, 105, <u>201</u>
Geology (GLG)   <u>100</u>, 103, <u>104</u>, ==**110,**== <u>114</u>, 202*, 276
Mathematics (MTH)   125, 148, 149, 160, 169, 176, 178, 180, 181, 182, 191, 192, 197, 293, 295
Physics (PHY)   <u>100</u>*, <u>105</u>, <u>111</u>, <u>122</u>, <u>211</u>, <u>222</u>

*For students in early elementary or early childhood education only.

IV. Humanities (8-9 Credits in more than one discipline)
Arabic (ARB)   111, 122
Art (ART)   ==**101, 102, 108, 111, 112, 114, 120, 121, 121A, 121B, 122, 125, 127, 128, 129,**== 130, 131, ==**136,**== 143, 150
Communication (COM)   101, 102, 130, 142, 183, 200, 210, 225
Dance (DAN)   180, ==**200**==
Drama (DRA)   152, ==**170,**== 208, ==**209**==
English Literature (ENG)   140, 160, 170, 181, 200, 211, 212, 213, 214, 222, 223, 224, 240, 242
French (FRN)   111, 122
German (GRM)   111, 122
Humanities (HUM)   101, 102, 103, 120, 145, 146, 150, 160, ==**170**==, 175, 185
Music (MUS)   140, 142, 180, 185
Philosophy (PHL)   101, 123, 200, 205, 240, 244, 245, 250
Spanish (SPN)   111, 122, 201, 202, 205, 224

College Board Advanced Placement Exams

Credit may be granted to students who have achieved a 3 or above on one of the College Board Advanced Placement exams offered through their high school. The student may be granted credit for a particular course or the credit may apply toward an elective. Additional Policies: Student Records has discretion to give elective credit for AP work that has not been specified as a WCC course equivalent; course equivalencies are determined exclusively by the Office of Curriculum and Assessment.

AP Test Name	Minimum Score Required	Credit Awarded	Course Equivalent
Art, History of	3	3	ART 130
Art, Studio - General Portfolio	3	3	ART 101
Biology	3	4	BIO 101
Calculus AB	3	5	MTH 191
Calculus BC	3	9	MTH 191 and MTH 192
Chemistry	3	4	CEM 111
	4	8	CEM 111 and CEM 122
Computer Science A	3	4	CPS 171
Computer Science AB	4	8	CPS 171 and CPS 271
Economics - Macroeconomics	4	3	ECO 211
Economics - Microeconomics	4	3	ECO 222
English Language and Composition[1]	3	4	ENG 111
	4	7	ENG 111 and ENG 226
English Literature[2]	3	3	Elective Credit
	4	6	Elective Credit and ENG 170
Environmental Science	3	4	ENV 101
French Language	3	5	FRN 111
	4	10	FRN 111 and FRN 122
Geography, Human	3	3	Elective
German Language	3	5	GRM 111
	4	10	GRM 111 and GRM 122
Government and Politics, U.S.	3	3	PLS 112
Government and Politics, Comparative	3	3	PLS 211
History, European	3	3	Elective
History, U.S.	3	3	HST 201
	4	6	HST 201 and HST 202
History, World	3	3	Elective
Music Theory	3	3	MUS 180
Physics B	3	4	PHY 111
	4	8	PHY 111 and PHY 122
Physics C - Mechanics	3	5	PHY 211
Physics C - Electricity and Magnetism	3	5	PHY 222
Psychology	3	3	PSY 100
Spanish Language	3	5	SPN 111
	4	10	SPN 111 and SPN 122
Spanish Literature and Culture	3	4	SPN 201
	4	8	SPN 201 & SPN 202
Statistics	3	4	MTH 160

AP Placement Notes:

[1] ENG LANG/ COMP is accepted as composition ENG 111 (+ ENG 226 with a score of 4 or above)

[2] ENG LIT/COMP is accepted as humanities elective (HUM) (+ ENG 170 with a score of 4 or above)

- Credit accepted for AP tests is not posted until after the student has completed an academic credit with WCC.
- Generally, credit is given with a minimum score of 3. (Economics, Computer Science AB are exceptions requiring a minimum score of 4 to give credit)
- In order to evaluate the AP scores, an official score report must be provided to have credit accepted.

Contact Enrollment Services at 734-973-3590 for additional course information.

New Courses Full and Conditionally Approved

Course	Title	Credit Hr(s)
ART 285	Self-Management for Working Artists	3
BIO 161	General Biology I Ecology and Evolution	4
BIO 162	General Biology II Cells and Molecules	4
BOS 175	Medical Office Communication	2
BOS 185	Medical Computer Skills and Electronic Health Records	3
CJT 154	Everyday Law: Law and Civil Liberties	3
CJT 170	Domestic and International Terrorism	3
CPS 255	IOS/Objective C - Apple Ipad/Iphone	4
CST 275	Data Recovery and Forensics	4
CUL 116	Fundamental Culinary Principles	3
CUL 145	Introduction to Dining Room Protocol	3
CUL 226	Advanced Dining Room and Beverage Management	3
ENV 105	Introduction to Environment and Society	3
GLG 276	Principles of Geographic Information Systems	3
HIT 101	Healthcare Terminology for the Health Information Technology Professional	3
HIT 205	Introductory ICD Coding	3
HIT 210	Intermediate/Advanced ICD Coding	3
HIT 215	Introductory Procedural Coding	3
HIT 220	Intermediate/Advanced Procedural Coding	3
HIT 250	Medical Coding Practicum	3
HSC 116	Phlebotomy for Healthcare Professionals	2
HSW 296	Neuropsychology of Addiction	3
HSW 297	Assessment of Co-occurring Disorders	3
HSW 298	Treatment of Addiction	3
JRN 210	Introduction to Copy Editing	3
MTH 170	Math for Beginning Programmers	3
MUS 165	Club DJ Mixing and Performance	3
MUS 247	Mixing and Mastering	3
RAD 103	Medical Professionalism in Clinical Radiography	1
RAD 259	Introduction to Computed Tomography (CT) Instrumentation and Protocols	1
RAD 261	Patient Care in Computed Tomography (CT)	1
RAD 270	Principles of Mammography	3
SPN 205	Second Year Spanish for Business	4
SUR 110	Introduction to Surgical Technology/Surgical Patient	3
SUR 130	Surgical Asepsis/Surgical Instruments	3
SUR 170	Surgical Pharmacology	2
SUR 180	Surgical Procedures I	3
SUR 181	Surgical Procedures I Clinical	2
SUR 210	Surgical Procedures II	3
SUR 211	Surgical Procedures II Clinical	2

Course	Title	Credit Hr(s)
SUR 230	Surgical Procedures III	3
SUR 231	Surgical Procedures III Clinical	2
SUR 250	Surgical Technology Seminar	3
SUR 270	Surgical Safety, Hazards and Biomedical Science	2
UAE 165	Accelerated HVACR Training	6
VID 185	Television Studio II	3
VID 220	Audio for Digital Video	3
VID 240	Digital Cinematography	3
VID 250	Advanced Editing	3
VID 260	Green Screen II	3

Reactivated Courses

Course	Title	Credit Hr(s)
ENG 025	High Beginning ESL Listening and Speaking	4

Course Changes: Code, Title and Credit Changes

WAS			IS NOW		
Course	Title	Cr	Course	Title	Cr
ACC 100	Fundamentals of Accounting I	3	ACC 100	Accounting Practices for Business	3
BOS 206	Scheduling and Internet Office Applications	2	BOS 206	Personal Management Application and Internet Resources	2
CCP 124	CDA Assessment Preparation	1	CCP 124	CDA Assessment Preparation	2
CIS 100	Introduction to Computers and Software Applications	3	CIS 100	Introduction to Computer Productivity Apps	3
CNT 211	Administering and Managing Microsoft Windows Server Active Directory	4	CNT 211	Installing and Configuring Windows Server 2012	4
CST 150	Computer Systems Technology I	5	CST 160	Computer Technology I	4
CST 155	Computer Systems Technology II	5	CST 165	Computer Technology II	4
CUL 100	Introduction to Culinary Arts Industry	3	CUL 100	Introduction to Food Service and Hospitality Industry	2
CUL 110	Sanitation and Hygiene	3	CUL 110	Sanitation and Hygiene	2
CUL 114	Baking I	3	CUL 114	Fundamentals of Baking	3
CUL 115	Pastry I	3	CUL 115	Fundamentals of Pastry	3
CUL 120	Culinary Skills	3	CUL 120	Classical Kitchen Operations	3
CUL 121	Introduction to Food Preparation Techniques	3	CUL 121	Modern Kitchen Operations	3
CUL 150	Food Service Management	3	CUL 150	Food Service Management and Supervision	3

Course Changes: Code, Title and Credit Changes - cont					
WAS			**IS NOW**		
Course	**Title**	**Cr**	**Course**	**Title**	**Cr**
CUL 210	Gardemanger	3	CUL 210	Advanced Kitchen Operations: Garde Manger	3
CUL 230	Quantity Food Production	3	CUL 230	Advanced Kitchen Operations: American Regional	3
CUL 231	A La Carte Kitchen	3	CUL 231	Advanced Kitchen Operations: Global Cuisine	3
ENG 023	High Beginning ESL Reading and Listening	4	ENG 023	High Beginning ESL Reading and Writing	4
GRM 109	Beginning Conversational German	2	GRM 101	Beginning Conversational German I	3
GRM 110	Intermediate Conversational German	2	GRM 102	Beginning Conversational German II	3
RAD 101	Methods in Patient Care	2	RAD 101	Methods in Patient Care	1
RAD 112	Radiographic Positioning I	3	RAD 112	Radiographic Positioning I	2
RAD 123	Radiographic Positioning II	3	RAD 123	Radiographic Positioning II	2
RAD 124	Principles of Radiographic Exposure	3	RAD 124	Principles of Radiographic Exposure	2
RAD 222	Pharmacology in Diagnostic Imaging	2	RAD 222	Pharmacology in Diagnostic Imaging	2
RAD 263	Practical Computed Tomography (CT) Imaging	2	RAD 263	Practical Computed Tomography (CT) Imaging	3
RAD 265	Computed Tomography (CT) Clinical Education I	2	RAD 265	Computed Tomography (CT) Clinical Education I	3
RAD 266	Advanced Computed Tomography (CT) Imaging	2	RAD 266	Advanced Computed Tomography (CT) Imaging	3
RAD 270	Principles of Mammography	2	RAD 270	Principles of Mammography	3
RAD 271	Mammography Procedures and QA	2	RAD 271	Mammography Quality Control (QC)	3
UAE 165	Accelerated HVACR Training	6	UAE 165	Accelerated HVACR Training	12

Discontinued Courses		
Course	**Title**	**Credit Hr(s)**
BIO 103	General Biology II	4
BMG 102	The Student Enterprise Zone	3
BOS 235	**Medical Office Communication**	**2**
BOS 265	**Medical Computer Skills and Electronic Health Records**	**3**
CUL 228	Layout and Equipment	3
DEN 133	Clinical Practice	2
INP 176	Web Animation I	3
INP 212	Web Graphics III	3
MTH 182	Business Calculus	4
NUR 257	Introduction to the Research Approach in Nursing	3
RES 100	Real Estate Principles and Prelicensure	4
RES 130	Real Estate Appraisal	3

New Programs

Program Title	Program Code	Degree/Certificate
Accelerated HVACR Training *	CCAHVT	Certificate of Completion
Addiction Studies	CPAS	Post-Associate Certificate
Baking and Pastry Arts	APBPA	Associate in Applied Science Degree
Certified Surgical Technology	APSRGT	Associate in Applied Science Degree
Digital Video Advanced Production	CVDVAP	Advanced Certificate
Fine and Performing Arts	CTFPA	Certificate
Global Studies	AAGS	Associate in Arts Degree
Medical Billing and Coding	CTMBC	Certificate
Medical Office Administration	CTMOA	Certificate

* This program has changed. See the note in the Program Change Section

Discontinued Programs

Program Title	Program Code	Degree/Certificate
Commercial Property Maintenance Technology	CVCPMT	Advanced Certificate
Computer Systems Security	APCSS	Associate in Applied Science Degree

Program Changes: changes in title, code and degree/certificate awarded

Previous Code and Title		Current Code and Title	
CCAHVT	Accelerated HVACR Training*	CTAHTR	Accelerated Training in HVACR
CCAWT	Accelerated Welder Training*	CTAWTR	Accelerated Training in Welding
APAATD	Administrative Assistant Technology	APBOAD	Business Office Administration
CPCTO	Computed Tomography	CPCTOM	Computed Tomography (CT)
APCNTM	Computer Networking	APCSN	Computer Systems and Networking
CTMOS	Medical Office Assistant (Clinical)	CTCMA	Clinical Medical Assistant
CVJAV	Programming in Java	CVJVPR	Program in Java

*These programs have changed from a six credit Certificate of Completion to a twelve credit Certificate effective Fall 2013.

Catalog Changes for Winter 2014 processed prior to 8/15/13
Explanation of differences between Fall web and catalog pdf.

New Courses Full & Conditionally Approved

CNT 290 Network Troubleshooting and Forensics   4 credits

HUM 220 Great Directors 3 credits

HUM 221 Film and Representation 3 credits

Discontinued Course

JRN 218 Sports Writing and Reporting

General Education – Computer and Information Literacy

CNT 290 Network Troubleshooting and Forensics   4 credits

Course Changes: Code, Title and Credit Changes

WAS in Fall 2013 and on the web			WILL BE in Winter 2014 and in catalog pdf		
BMG 200	Human Relations in Organizations	3 credits	BMG 200	Relationship Skills in the Workplace	3 credits
BOS 250	Office Administration II	4 credits	BOS 250	Office Administration	4 credits
CNT 223	Windows Server Networking Infrastructure Configuration	4 credits	CNT 223	Administering Windows Server 2012	4 credits
CNT 224	Microsoft Server Administrator	4 credits	CNT 224	Configuring Advanced Windows Server 2012 Services	4 credits
JRN 220	Journalism for the Web	3 credits	JRN 220	Introduction to Digital Journalism	3 credits

New Program

Film Studies (AAFS) Associate in Arts Degree

Course information effective Fall 2013. The 2013-2014 Catalog pdf has titles, descriptions and prerequisites that will be effective winter 2014.

BIO 111 Anatomy and Physiology – Normal Structure and Function – Prerequisite change

Level I Prerequisites: Academic Reading and Writing Levels of 6; high school chemistry or CEM 090 and high school biology or BIO 101 or BIO 102; minimum grade "C" all BIO, CEM, and high school requirements

This course provides students with an intensive, in-depth introduction to the structure and function of all human body systems. The emphasis on basic physiological principles also provides students with a good base for more advanced courses. The laboratory provides dissections and experiments.

BMG 180 Introduction to Logistics and Supply Chain Management – Prerequisite change

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 4 or MTH 125 or MTH 160, minimum grade "C"; CIS 100 or CIS 110

The course covers the concepts, processes, and strategies of Supply Chain Management (SCM), which involves the coordination of suppliers, manufacturers, distributors, and retailers to ensure that products and services are available to the final consumer in a timely and cost-effective fashion while maintaining the service level customers demand. Topics include 21st Century supply chains and network designs, procurement and manufacturing, integrated operations planning, inventory management, transportation operations, warehousing and materials handling, relationship management, as well as operational and financial performance measures. Attention is paid to aligning supply chain strategies with corporate goals, analyzing current ethical and sustainable issues, and employing various analytical techniques used in solving supply chain-related problems.

BMG 226 Transportation Management - Prerequisite change

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 4 or MTH 125 or MTH 160, minimum grade "C"; CIS 100 or CIS 110

In this course, students will develop knowledge, skills and comprehension of transportation and logistics management, since transportation expense often represents one of the largest single costs faced by a company. It will cover how transportation moves materials, products, information, and finances through the global supply chain, increases a company's competitive advantage, and differentiates an organization from the competition. Students will learn how to analyze a firm's supply chain, develop a broad transportation strategy, create a detailed implementation plan, and then evaluate the results to make further improvements.

BMG 275 Business and Supply Chain Analytics – Prerequisite change

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 4 or MTH 125 or MTH 160, minimum grade "C"; CIS 100 or CIS 110

In this course, students are introduced to the decision-making process and related decision-support tools that managers use on a daily basis. Students will gain the managerial, technical and analytical skills needed to gather, organize and analyze data used to describe and keep track of departmental as well as company performance. Through the use of scenario planning, computer modeling, and business related simulations, students will gain practical experience in anticipating the impact of decisions and applying sound reasoning when creating intelligent solutions to realistic business problems.

BOS 207 Presentation Software Applications – Description change

Level I Prerequisites: Academic Reading and Writing Levels of 6

This course teaches presentation software concepts and applications using Microsoft PowerPoint in a Windows operating system. Skills and concepts include creating, editing, formatting, and enhancing presentations; using outline view and clip art to create a slide show; using embedded visuals to enhance a slide show; enhancing a presentation with interactive OLE files; and creating Web pages. Applying presentation software concepts and functions to business environments is stressed. Students should be familiar with Windows and have keyboarding skills of at least 25 wpm.

BOS 208 Desktop Publishing for the Office – Description change

Level I Prerequisites: Academic Reading and Writing Levels of 6

This course provides a hands-on approach to developing skills in the use of Microsoft Publisher desktop publishing software to create office flyers, newsletters, brochures, bulletins, and related materials. Students use templates and styles and import material created from other software programs. Creating Web documents and posting them to a Web site is covered. Students import images from a scanner and a digital camera and are introduced to image-editing techniques. Good layout techniques are applied to produce documents that communicate effectively in business environments. Students must be familiar with Windows and have keyboarding skills of at least 25 wpm.

BOS 223 Medical Office Procedures – Description change

Level I Prerequisites: Academic Reading and Writing Levels of 6

This course covers administrative assistant responsibilities in a traditional and computerized medical office or hospital including appointments, patient records, telephone procedures, and credit and collection procedures. Medical insurance is studied as well as legal considerations in a medical office. Students complete forms for Blue Cross/Blue Shield, Medicare, Medicaid, Workers' Compensation, CHAMPUS, and major insurance carriers using the proper coding system. Students should be familiar with Windows and have keyboarding skills of at least 30 wpm.

BOS 250 Office Administration II – Title, prerequisite and description change

Level I Prerequisites: Academic Reading and Writing Levels of 6

This course covers many functions of a business office. Emphasis is placed on the expanding duties of an administrative assistant including time management, business composition, and human relations skills. Continued importance is placed on verbal and written communication. Teamwork, office environment, etiquette, and ergonomics are other topics covered. Specialized office documents are prepared. The role of technology in a business office is continually explored and applied. Students should be familiar with Windows and keyboard at least 25 wpm to be successful.

CCP 122 Essentials of Early Care and Education – I – Description, co-requisite and prerequisite change

Level I Prerequisites: Academic Reading and Writing Levels of 6

This course provides an overview of the basic components of child care and early education. It also provides part of the formal training for the national child care credential, the Child Development Associate (CDA). Students gain knowledge of six of the thirteen functional areas of the CDA competency standards: safety, health, learning environment, physical and cognitive development and communication. Students must be at least 18 years of age and have a high school diploma/GED or be concurrently enrolled in a state approved vocational high school child care program to register for this course. Concurrent enrollment in CCP 132 or regular access to a licensed child care program is required to complete assignments. The title of this course was previously Child Development Credentialing I.

CCP 123 Essentials of Early Care and Education – II - Description, co-requisite and prerequisite change

Level I Prerequisites: Academic Reading and Writing Levels of 6; CCP 122 may enroll concurrently

This course provides an overview of the essential elements of child care and early education and also provides part of the formal training for the national child care credential, the Child Development Associate (CDA). Students cover seven of the thirteen functional areas of the CDA competency standards: creativity, self, social, guidance, families, program management and professionalism. Students must be at least 18 years of age and have a high school diploma/GED or be concurrently enrolled in a state approved vocational high school child care program to register for this course. Concurrent enrollment in CCP 133 or regular access to a licensed child care program is required to complete assignments. The title of this course was previously Child Development Credentialing II.

CCP 132 Child Development Practicum I – Description, co-requisite and prerequisite change

Level I Prerequisites: Academic Reading and Writing Levels of 6; CCP 122 minimum grade "C", may enroll concurrently; consent required

This course provides a supervised work experience for child care students and CDA candidates. Students are expected to demonstrate competence in the CDA functional areas: safety, health, learning environment, physical development, cognitive development, and communication. Students are required to be employed in a licensed child care center with infants and toddlers or preschoolers, or licensed family child care home. Observations will be completed at the work site by a practicum instructor during regular hours of operation using the standards for the Child Development Associate national child care credential.

CCP 133 Child Development Practicum II - Description, co-requisite and prerequisite change

Level I Prerequisites: Academic Reading and Writing Levels of 6; CCP 123 minimum grade "C", may enroll concurrently; consent required

In this course, students work in a licensed child care facility for a minimum of 120 clock hours. Placement is not provided by the college. Students will demonstrate competence in the CDA functional areas: physical, cognitive development, communication, creativity, self, social and guidance during a supervised work experience. Documentation of 120 clock hours of experience in a licensed child care center with infants and toddlers or preschoolers, or licensed family child care home is required. Observations are completed at the work site by a practicum instructor during regular hours of operation using CDA standards.

CNT 223 Windows Server Networking Infrastructure Configuration – Prerequisite change

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 1; CSS 180, CNT 211 or CST 225, minimum grade "C"

This course prepares students to install, configure and administer Windows Server Networking Services. Services configured on server include Telnet, FTP, DHCP, DNS, WINS, RAS, VPN, Router, NAT and File/Print. Networking basics, including the OSI/TCP Models, IP addressing and subnetting, are also reviewed. All server configurations are tested from clients using XP Pro/Vista. The course materials are based on Server 2003 MCSA/Server 2008 MCTS certifications.

CNT 224 Configuring Advanced Windows Server 2012 Services – Description change

Level I Prerequisites: Academic Reading and Writing Levels of 6; CNT 223 minimum grade "C", may enroll concurrently

This course will give a student extensive experience in Windows Server Management and Administration. Emphasized are Windows deployment services, network infrastructure servers, including routers, RRAS, radius, NAT, IIS services and terminal services. Imaging, virtual machines, network load balancing, backup strategies and system fault tolerance are also covered. This course will build a strong foundation in preparation for future employment as well as the Microsoft MCSA/MCITP Certification.

DEN 202 Advanced Clinical Practice - Prerequisite and description change

Level I Prerequisites: Academic Reading and Writing Levels of 6; DEN 130 minimum grade "C" or DEN 133 with grade "P"; DEN 133 may enroll concurrently
Level II Prerequisites: current CPR card

This course builds on the student's clinical experience of DEN 130/133. The student develops advanced clinical skills in areas of interest. Students must complete two rotations at different clinical sites and provide evidence of such a rotation.

HSC 100 Basic Nursing Assistant Skills – Description and change to contact hours

Level I Prerequisites: Academic Reading and Writing Levels of 3
40 lecture, 25 lab, 25 clinical, 0 other, 90 total contact hours

This state approved 90 hour (3 weekdays or 5 evenings per week) program prepares students for employment in a variety of health care settings from nursing homes, hospitals or home health care agencies where they will work as a nursing assistant. After the class is successfully completed, the student will be eligible to take the state clinical and knowledge tests for certification. Certification is required for employment as a nursing assistant in long-term care facilities.

MTH 149 Functional Math for Elementary Teachers II – Prerequisite change

Level I Prerequisites: Academic Reading and Writing Levels of 6; MTH 148 minimum grade "C"

This course is the second in a two-course sequence presenting the mathematical concepts and problem-solving techniques necessary for success in a teaching career at the elementary school level. It is not a course solely for math teachers; rather it provides the general mathematical background for teachers of all subjects. Topics include probability, an introduction to statistics, introductory geometry, congruence and similarity and measurement concepts.

MTH 167 Math Applications for Health Science – Description change

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 3

This course reviews the mathematical and algebraic skills required to solve calculations in health-related fields. This course relates these skill applications in the health care field. The topics, which emphasize applications in the health care field, include: mathematics through algebra; the metric system; proportions, dimensional analysis and an introduction to statistics.

PHO 220 Advanced Studio Techniques – Prerequisite change

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 3; PHO 117 and PHO 127, minimum grade "C-"; PHO 116 or PHO 216, minimum grade "C-", may enroll concurrently in PHO 116

In this course, students will concentrate on advanced image construction techniques and the business issues relevant to their production. Students integrate their previous studio and imaging experiences with the pre- and post-production and critical thinking skills required to produce a job. Emphasis is placed on the business practices and ethical issues behind the creation of images for retail portraiture, commercial publication, and fine-art sectors of the industry.

Curriculum Organization Chart

Advanced Technologies and Public Service Careers Division

Automotive Body Department Disciplines:
Automotive Body Repair (ABR)   Custom Cars and Concepts (CCC)
Collision Repair Technician (CRT)

Automotive Services Department Discipline:
Auto Services (ASV)

Construction Institute Department Disciplines:
Construction Management (CMG)   Residential Construction Technology (CON)

Heating, Ventilation, A/C Department Discipline:
Heating, Ventilation, Air Conditioning and Refrigeration (HVA)

Industrial Technology Department Disciplines:
Advanced Manufacturing Systems (AMS)   Machine Tool Technology (MTT)
Electricity/Electronics (ELE)   Numerical Control (NCT)
Fluid Power (FLP)   Robotics (ROB)

Motorcycle Technology Department Discipline:
Motorcycle Service Technology (MST)

Public Service Careers Department Discipline:
Child Care Professional (CCP)   Criminal Justice (CJT)

United Association Programs and Services Disciplines:
Ironworker Instructor Training (IWT)   United Association Training (UAT)
Union Approved Supervision (UAS)

United Association Apprenticeships Disciplines:
Bricklayer Apprenticeship (BAC)   United Association Pipefitters (UAF)
Electrical Workers Apprenticeship (EWA)   United Association Plumbers (UAP)
Ironworker Apprenticeship (IWA)   United Association Service Technicians (UAE)
Local 190/UA Plumbers & Pipefitters (APP)   United Association Sprinkler Fitters (UAR)

Welding and Fabrication Department Discipline:
Welding and Fabrication (WAF)

Business and Computer Technologies Division

Business Department Disciplines:
Accounting (ACC)   Real Estate (RES)
Business Management (BMG)   Tax (TAX)

Business Office Systems Department Discipline:
Business Office Systems (BOS)   Health Information Technology (HIT)

Computer Instruction Department Disciplines:
Computer Information Systems (CIS)   Computer Systems Security (CSS)
Computer Networking Technology (CNT)   Computer Systems Technology (CST)
Computer Science (CPS)

Culinary/Hospitality Management Department Discipline:
Culinary Arts (CUL)

Digital Media Arts Department Disciplines:
Animation (ANI)   Photography (PHO)
Graphic Design Technology (GDT)   Video Production (VID)
Internet Professional (INP)

Humanities, Social and Behavioral Science Division

Academic Skills Department Discipline:
Academic Skills (ACS)   Reading (REA)

Behavioral Sciences Department Disciplines:
Human Services Worker (HSW)   Sociology (SOC)
Psychology (PSY)

English/Writing Department Disciplines:
English/Writing (ENG)   Journalism (JRN)

Foreign Language Department Disciplines:
Arabic (ARB)   German (GRM)
French (FRN)   Spanish (SPN)

Humanities Department Disciplines:
Art (ART)   Humanities (HUM)
Communication (COM)   Philosophy (PHL)

Performing Arts Department Disciplines:
Dance (DAN)   Music (MUS)
Drama (DRA)   Yoga (YOG)

Social Science Department Disciplines:
Anthropology (ANT)   History (HST)
Economics (ECO)   Political Science (PLS)
Geography (GEO)

Math, Science and Health Division

Allied Health Department Disciplines:
Clinical Medical Certification (CMC)   Physical Therapist Assistant (PTA)
Dental Assisting (DEN)   Radiography (RAD)
Pharmacy Technology (PHT)   Surgical Technology (SUR)

Life Science Department Disciplines:
Biology (BIO)   Physical Education Activities (PEA)

Mathematics Department Discipline:
Mathematics (MTH)

Nursing & Health Science Department Disciplines:
Health Science (HSC)   Nursing (NUR)

Physical Sciences Department Disciplines:
Astronomy (AST)   Geology (GLG)
Chemistry (CEM)   Physics (PHY)
Environmental Science (ENV)   Science (SCI)

Program Advisory Committees 2012 - 2013

Members of program Advisory Committees work closely with WCC faculty to improve the curriculum, keep instructors current on market trends and provide advice for updating equipment and facilities. These individuals, all local community volunteers, represent a wide and diverse spectrum of the business, industry, professional and educational agencies of the region. The College depends on the advice and assistance of these representatives to continually maintain the highest quality educational programs, courses and services. Deans and Department chairs are ex-officio members of committees in their areas.

3D Animation
Rose Adler, With A Twist Studios
Kevin Bindschadler, Detroit Science Center
Carlos Marcano, Saagara, Inc.
Randy Rockafellow, LaDriere Studios
Robert Seppala, EverTell LLC
Randy VanWagnen, Washtenaw Community College
Jason Woodwyk, Freelance Animator

Child Care
Sally Adler, Washtenaw Community College
Carrie Anderson, Morning Star Child Care Center
Jennifer Bauer, Univ. of Michigan - Dearborn
Brigid Beaubien, Eastern Michigan Univ.
Kathleen Burchi, Child Care Network
Linda Coon, Univ. of Michigan North Campus
    Children's Center
Liz Galimore, Saline High School
Laura Griswold, Gretchen's House Child Care
Peretz Hirshbein, JCC of Greater Ann Arbor
Amber Horton, Learning Care Group
Shannon Lockhart, High/Scope Educational Research
    Foundation
Vickie Malcolm, Ann Arbor Public Schools
Jessica Schairer, Child Time Learning Center
Scott Stewart, Bemis Farms Preschool

Collision Repair
Justin Ball, State Farm Insurance
Jody Barrons, State Farm Insurance
Mark Cartier, Ken Root Sales
Derek J. Dejean, 3M
Robert Feldkamp, WCC
Mark Dosey, State Farm Insurance
Don Gene, Butman Ford
Matt Homer, 3M
Tim Rutowski, Ford Motor Company
Gary Sobbry, Washtenaw Community College
Tony Smith, Smith-Distribution
Grant Templeton, Smith Distribution
Robert Turkowski, Painters Supply Company
Walter Ostrowski, City Auto Body

Computer Information Systems
Bryan Beecher, Inter-Univ. Consortium for Political
    and Social Research
Jamie Begin, RightBrain Networks
Don Burnett, Software/Web Developer
Neil Gudsen, Washtenaw Community College

Joseph Kryza, Univ. of Michigan Hospital
Scott Lemm, Stefanini Tech Team
Timothy Rolston, Univ. of Michigan
Charles Singer, Univ. of Michigan Hospital MCIT
Matthew Thompson, NuSpire Networks

Construction Technology
Phyllis Grezegorczyk , Washtenaw Community
    College (retired)
Christine Hill, Builders and Remodelers Council of
    Greater Ann Arbor
Doug Selby, Meadowlark Builders
John Fingerle, Fingerle Lumber
Cristy Lindemann, Washtenaw Community College
Laura Spear, Washtenaw Door and Trim
Andrew O'Neal, O'Neal Construction
Bob Guenther, Guenther Homes
Rob Nissly, Habitat for Humanity Huron Valley

Dental Assisting Advisory Committee
Daniel Edwards, D.D.S., Oak Valley Dental Assoc.
Gwen Graham-Feldkamp, Michigan Prison Systems
Marie Fluent, D.D.S.
Heidi Hall, Kay L. Wilson, D.D.S.
Jillian Henry, Michigan Oral & Maxillofacial
    Surgeons
Ronald Heys, D.D.S.
Arthur P. Lawrence, D.D.S.
Matthew Matuszak, D.D.S.
Natalie McGraw, D.D.S.
Mary Stahle, D.D.S.
Kathleen Weber, Washtenaw Community College
Lyn Wood, William P. Sorensen, D.D.S.
Pamela Young, Steven F. Shwedel, D.D.S.

Digital Media Arts: Photography
Colin Blakely, Eastern Michigan Univ.
Kelly Blok, Canon USA
Robert Cleveland, Robert Cleveland Photography
Tim Householder, Timothy Wells Photo
Christopher Jablonski, FOTO/LIFE Studio
Sandi Morelli, Latcha & Associates
Joanne Scherf, Studio 52Zero
Rosh Sillars, Rosh Group, Inc.
Erik Valind, Erik Valind Photography
Don Werthmann, Washtenaw Community College

Digital Video
Bob Berg, Palindrome Productions
Chris McElroy, Univ. of Michigan
Randy Rockefellow, Baker College
Terri Sarris, Univ. of Michigan
Matthew Zacharias, Washtenaw Community College

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Guy Conti, ContiLegal
Stacy Fuqua, United Bank & Trust
Ralph Gurganus, C.P.A.
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Ida Hendrix, Simon Group
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Kathy MacDonald, The MacDonald Group
Renee Mallone, Kick the Moon
Steven Mangigian, Zingerman's Coffee Company
Thomas Ogar, Merrill Lynch
Charles Penner, MI-SBTDC
Kate Roberts, Got-Web, Inc.
Lacie Sandstrom, Google
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Candice Shavalia, Busch's, Inc.
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Timothy Cross, Concordia Univ.
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Nan Holmes, WCC (retired)
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Ritu Khanna, Univ. of Michigan Health System
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Heather Poucher, Univ. of Michigan Healthcare Sys.
Rene Stark, Washtenaw Community College

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Christina Booher, Busch's
Tricia Burgam, Oakwood Annapolis Hospital
Gwendolyn Chivers, Univ. of MI, Health Service
Gwen Collins, POH Regional Medical Center
Kevin Collins, Oakwood Annapolis Hospital
Chris Cook, St. Joseph Mercy Hospital
Dennis Delonnay, Veterans Admini. Medical Center
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Dawn Fryer, Dexter Pharmacy
Matthew Johnson, Chelsea Community Hospital
Deborah King, Sinai-Grace Hospital
Kathy Kinsey, Univ. of Michigan Health System
Al Knaak, Village Pharmacy
Marie Leonard, St. Joseph Mercy Hospital
Jean Osborn, Bixby Medical Center
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Program Information Report

School of Advanced Manufacturing Systems

Whether your interest is in manufacturing or automation, the programs in the School of Advanced Manufacturing Systems will fit your needs. Maintain and troubleshoot the machines that make commercial goods by specializing in one or more aspects of the machining industry. Develop entry level or advanced skills in electronics, automation hydraulics or numerical controls.

Washtenaw Community College offers programs at several levels for students who want to begin new careers, or advance in their existing careers. The first level is the certificate, which can vary from nine to thirty-six credits, depending on the field. Certificates generally prepare students for entry-level jobs.

After completing a certificate, students can progress to the next level, the advanced certificate. The credit hours required for these programs also vary. This type of certificate provides a more specialized level of skill development, and often allows students to upgrade their positions at their places of employment.

The next level, an Associate in Applied Science, is available for some programs. For some career fields, it is possible to earn a certificate, advanced certificate, and an Associate in Applied Science degree in the same field. In these cases, the credit hours from the certificate and advanced certificate can be applied to the credit hours needed for the Associate in Applied Science degree.

Alternatively, students can earn an AAS in Occupational Studies by completing a certificate, an advanced certificate (if one exists) and General Education requirements.

Automation

Are you looking for a career as a hydraulic technician or an introduction to manufacturing engineering? Consider the field of automation.

Fluid Power (CTFPOW)
Certificate
Program Effective Term: **Fall 2013**

This program prepares students for entry level positions as a hydraulic technician. The program gives students an understanding of hydraulic and pneumatic system design including motion control, using electro-hydraulic proportional and servo valves. Students will be prepared to take the Hydraulic Specialist or Technician Certification Examination through the Fluid Power Society.

Articulation:
Eastern Michigan University, BS degree.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/departments/curriculum/articulation.php?levelone=colleges.

Core Courses		(12 credits)
AMS 103	Materials and Processes	3
BMG 241	Innovation: Process and Application	1
FLP 101	Fluid Power Fundamentals - I	2
MTT 102	Machining for Auto Applications	2
NCT 101	Introduction to Computerized Machining (CNC) - I	2
ROB 101	Robotics I - I	2

Core courses must be taken before Major/Area Requirements.

Major/Area Requirements		(12 credits)
FLP 110	Fluid Power Fundamentals - II	2
FLP 214	Hydraulic Circuits and Controls	4
FLP 225	Fluid Power Motion Control	3
FLP 226	Pneumatics	3

Minimum Credits Required for the Program: **24**

Notes:

This certificate can also lead to an associate degree in Automation Technology.

Automation Technology (APATEC)
Associate in Applied Science Degree
Program Effective Term: **Fall 2013**

This program prepares students for entry-level positions as an automated equipment technician who assembles, installs, programs, troubleshoots, and maintains robotic and automated equipment. Students have a choice to follow any of four different specialty tracks which will prepare them for the various applications of automation. Each track features a variety of application level classes where the student performs lab-oriented practice for required skills. It is highly recommended that beginning students take at least one technical class during their first semester. See an advisor in the Industrial Technology department for assistance.

Students must select one of the concentrations to complete as a program requirement.

Program Concentrations
Fluid Power Specialty (FPWR)
FLP 110 Fluid Power Fundamentals - II
FLP 214 Hydraulic Circuits and Controls
FLP 225 Fluid Power Motion Control
FLP 226 Pneumatics

Industrial Electronics Specialty (IELC)
ELE 211 Basic Electronics
ELE 254 PLC Applications
FLP 226 Pneumatics

Machine Tool Technology Specialty (MTTE)
CAD 105 Blueprint Reading and Analysis
MTT 111 Machine Shop Theory and Practice
MTT 203 Advanced Machine Tool Operations
NCT 110 Introduction to Computerized Machining (CNC) - II

Numerical Control Specialty (NCTL)
NCT 110 Introduction to Computerized Machining (CNC) - II
NCT 121 Manual Programming and NC Tool Operation
NCT 221 Advanced Manual Programming and NC Tool Operation
NCT 249 CAD/CAM CNC Programming

Articulation:
Eastern Michigan University, several BS degrees.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site:
http://www.wccnet.edu/departments/curriculum/articulation.php?levelone=colleges.

Minimum Concentration Credits Required for the Program: **69**

Automation Technology Concentrations

Fluid Power Specialty (FPWR)		(70 credits)

First Semester		(15 credits)
FLP 101	Fluid Power Fundamentals - I	2
FLP 110	Fluid Power Fundamentals - II*	2
NCT 101	Introduction to Computerized Machining (CNC) - I	2
NCT 110	Introduction to Computerized Machining (CNC) - II**	2
ROB 101	Robotics I - I	2
ROB 110	Robotics I - II	2
Elective	Math Elective(s)	3

Second Semester		(13 credits)
AMS 103	Materials and Processes	3
BMG 241	Innovation: Process and Application	1
ELE 111	Electrical Fundamentals	4
MTT 102	Machining for Auto Applications	2
	Computer Lit. Elective(s)	3

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Third Semester		(14 credits)
FLP 214	Hydraulic Circuits and Controls	4
ROB 212	Robotics II	4
	Speech Elective(s)	3
	Writing Elective(s)	3

Fourth Semester		(14 credits)
ELE 224	Introduction to PLCs	4
FLP 225	Fluid Power Motion Control	3
ROB 222	Robotics Simulation	2
ROB 223	Robotics III	2
	Soc. Sci. Elective(s)	3

Fifth Semester		(14 credits)
FLP 226	Pneumatics	3
ROB 224	Robotics IV	4
	Arts/Human. Elective(s)	3
	Nat. Sci. Elective(s)	4

Minimum Credits Required for the Concentration or Option: 70

Industrial Electronics Specialty (IELC)		(71 credits)

First Semester		(15 credits)
FLP 101	Fluid Power Fundamentals - I	2
FLP 110	Fluid Power Fundamentals - II*	2
NCT 101	Introduction to Computerized Machining (CNC) - I	2
NCT 110	Introduction to Computerized Machining (CNC) - II**	2
ROB 101	Robotics I - I	2
ROB 110	Robotics I - II	2
Elective	Math Elective(s)	3

Second Semester		(17 credits)
AMS 103	Materials and Processes	3
BMG 241	Innovation: Process and Application	1
ELE 111	Electrical Fundamentals	4
ELE 211	Basic Electronics	4
MTT 102	Machining for Auto Applications	2
	Computer Lit. Elective(s)	3

Third Semester		(14 credits)
ELE 254	PLC Applications	4
ROB 212	Robotics II	4
	Speech Elective(s)	3
	Writing Elective(s)	3

Fourth Semester		(14 credits)
ELE 224	Introduction to PLCs	4
FLP 226	Pneumatics	3
ROB 222	Robotics Simulation	2
ROB 223	Robotics III	2
	Soc. Sci. Elective(s)	3

Fifth Semester		(11 credits)
ROB 224	Robotics IV	4
	Arts/Human. Elective(s)	3
	Nat. Sci. Elective(s)	4

Minimum Credits Required for the Concentration or Option: 71

Program Information Report

Machine Tool Technology Specialty (MTTE)		(71 credits)
First Semester		**(15 credits)**
FLP 101	Fluid Power Fundamentals - I	2
FLP 110	Fluid Power Fundamentals - II*	2
NCT 101	Introduction to Computerized Machining (CNC) - I	2
NCT 110	Introduction to Computerized Machining (CNC) - II**	2
ROB 101	Robotics I - I	2
ROB 110	Robotics I - II	2
Elective	Math Elective(s)	3
Second Semester		**(16 credits)**
AMS 103	Materials and Processes	3
BMG 241	Innovation: Process and Application	1
CAD 105	Blueprint Reading and Analysis	3
ELE 111	Electrical Fundamentals	4
MTT 102	Machining for Auto Applications	2
	Computer Lit. Elective(s)	3
Third Semester		**(14 credits)**
MTT 111	Machine Shop Theory and Practice	4
ROB 212	Robotics II	4
	Speech Elective(s)	3
	Writing Elective(s)	3
Fourth Semester		**(15 credits)**
ELE 224	Introduction to PLCs	4
MTT 203	Advanced Machine Tool Operations	4
ROB 222	Robotics Simulation	2
ROB 223	Robotics III	2
	Soc. Sci. Elective(s)	3
Fifth Semester		**(11 credits)**
ROB 224	Robotics IV	4
	Arts/Human. Elective(s)	3
	Nat. Sci. Elective(s)	4

Minimum Credits Required for the Concentration or Option: 71

Numerical Control Specialty (NCTL)		(72 credits)
First Semester		**(15 credits)**
FLP 101	Fluid Power Fundamentals - I	2
FLP 110	Fluid Power Fundamentals - II*	2
NCT 101	Introduction to Computerized Machining (CNC) - I	2
NCT 110	Introduction to Computerized Machining (CNC) - II**	2
ROB 101	Robotics I - I	2
ROB 110	Robotics I - II	2
Elective	Math Elective(s)	3
Second Semester		**(13 credits)**
AMS 103	Materials and Processes	3
BMG 241	Innovation: Process and Application	1
ELE 111	Electrical Fundamentals	4
MTT 102	Machining for Auto Applications	2
	Computer Lit. Elective(s)	3
Third Semester		**(14 credits)**
NCT 121	Manual Programming and NC Tool Operation	4
ROB 212	Robotics II	4
	Speech Elective(s)	3
	Writing Elective(s)	3
Fourth Semester		**(15 credits)**
ELE 224	Introduction to PLCs	4
NCT 221	Advanced Manual Programming and NC Tool Operation	4

ROB 222	Robotics Simulation	2
ROB 223	Robotics III	2
	Soc. Sci. Elective(s)	3

Fifth Semester		**(15 credits)**
NCT 249	CAD/CAM CNC Programming	4
ROB 224	Robotics IV	4
	Nat. Sci. Elective(s)	4
	Arts/Human. Elective(s)	3

Minimum Credits Required for the Concentration or Option: 72

Minimum Credits Required for the Program: **69**

Notes:

*Students who have successfully completed FLP 110 as part of their certificate do not need to take this course as a Major/Area requirement. Course can only be taken once for credit.

**Students who have successfully completed NCT 110 as part of their certificate do not need to take this course as a Major/Area requirement. Course can only be taken once for credit.

See an advisor to assist in scheduling and planning for each semester as some classes have limited offering.

Electronics

Specialize in industrial electricity/electronics or computerized systems and programmable logic controllers. The field of Electronics is open to you.

Industrial Electronics Technology (CFIET)
Certificate
Program Effective Term: Fall 2013

This program prepares students for entry-level jobs in any of the industrial electricity/electronics cluster of occupations. Students will develop skills in the installation, maintenance, and troubleshooting of industrial control systems with a focus on programmable logic controllers, electronic sensors, and electronic control circuits.

Articulation:
Eastern Michigan University, several BS degrees.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/departments/curriculum/articulation.php?levelone=colleges.

Program Admission Requirements:
Students must have an Academic Math Level of 3 to enroll in ELE 111. One year of high school algebra with a grade of "C" or better is recommended.

Major/Area Requirements		(16 credits)
ELE 111	Electrical Fundamentals	4
ELE 211	Basic Electronics	4
ELE 224	Introduction to PLCs	4
ELE 254	PLC Applications	4

Minimum Credits Required for the Program: **16**

Industrial Electronics Technology II (CVIET2)
Advanced Certificate
Program Effective Term: **Fall 2013**

This program provides advanced instruction for students who wish to enhance their skills in the area of industrial electronic control. The courses in this certificate build on the foundation of electricity and electronic control introduced in the Industrial Electronics Technology certificate. Students will learn to apply and control electric motors, use structured techniques to program PLCs, and relate their understanding of electricity and controls to the requirements of the National Electrical Code. This program prepares students to take the State of Michigan Journeyman Electrician Licensing Exam.

Articulation:
Eastern Michigan University, several BS degrees.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/departments/curriculum/articulation.php?levelone=colleges.

Program Admission Requirements:
Completion of the Industrial Electronics Technology certificate or equivalent.

Major/Area Requirements		(12 credits)
ELE 134	Motors and Controls	4
ELE 204	National Electrical Code	4
ELE 284	Control Logic Programming	4

Minimum Credits Required for the Program: **12**

Machine Tool
Learn about machining operations through the production of parts using WCC's extensive machine tool laboratory.

<div align="center">**Program Information Report**</div>

Machine Tool Technology (CTMTTC)
Certificate
Program Effective Term: **Fall 2013**

This program prepares students for manufacturing jobs where they will use advanced machine tool setups for the manufacture of non-production parts or prototype parts for industry. This program provides advanced skills in the use of tool room lathes, mills, precision grinders, and sophisticated measuring instruments. Students will learn machining operations through the production of parts, on modern conventional mills, lathes, and grinding equipment in WCC's extensive machine tool laboratory.

Articulation:
Eastern Michigan University, several BS degrees.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/departments/curriculum/articulation.php?levelone=colleges.

Core Courses		(12 credits)
AMS 103	Materials and Processes	3
BMG 241	Innovation: Process and Application	1
FLP 101	Fluid Power Fundamentals - I	2
MTT 102	Machining for Auto Applications	2
NCT 101	Introduction to Computerized Machining (CNC) - I	2
ROB 101	Robotics I - I	2

*Core courses must be taken before Major/Area Requirements.

Major/Area Requirements		(13 credits)
CAD 105	Blueprint Reading and Analysis	3
MTT 111	Machine Shop Theory and Practice	4
MTT 203	Advanced Machine Tool Operations	4
NCT 110	Introduction to Computerized Machining (CNC) - II	2

Minimum Credits Required for the Program: **25**

Notes:

This certificate can also lead to an associate degree in Automation Technology.

Manufacturing

Develop skills needed to be a numerical control operator or utilize your imagination in the field of manufacturing.

Numerical Control Programming (CTNCPC)
Certificate
Program Effective Term: **Fall 2013**

This program prepares students for jobs as a numerical control operator or programmer. The program gives students skills in manual and computer assisted programming languages, using CAD/CAM software to program challenging and complex 2 and 3 axes CNC machine tool operations. Students will also become proficient in the interpretation of engineering drawings, visualization of machine operations, and the setup requirements of numerical controlled machine tools.

Articulation:
Eastern Michigan University, several BS degrees.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/departments/curriculum/articulation.php?levelone=colleges.

Core Courses		(12 credits)
AMS 103	Materials and Processes	3
BMG 241	Innovation: Process and Application	1
FLP 101	Fluid Power Fundamentals - I	2
MTT 102	Machining for Auto Applications	2
NCT 101	Introduction to Computerized Machining (CNC) - I	2
ROB 101	Robotics I - I	2

Core courses must be taken before Major/Area Requirements.

Major/Area Requirements		(14 credits)
NCT 110	Introduction to Computerized Machining (CNC) - II	2
NCT 121	Manual Programming and NC Tool Operation	4
NCT 221	Advanced Manual Programming and NC Tool Operation	4
NCT 249	CAD/CAM CNC Programming	4

Minimum Credits Required for the Program: **26**

Notes:

This certificate can also lead to an associate degree in Automation Technology or Occupational Studies.

Other Options for Advanced Manufacturing Systems

Computer Systems Technology (CTCSTC)
Certificate
Program Effective Term: Fall 2013

This program prepares students for employment as a microcomputer service technician. While preparing students to pass the Computer Technology Industry Association's (CompTIA) A+ Certification Examination, the program goes well beyond the requirements of the exam. The student will develop hands-on troubleshooting skills in solving hardware problems, working with operating systems, and relating to customers. This program also provides the foundation for Washtenaw Community College's two advanced certificates in computer networking.

Articulation:
Eastern Michigan University, BS degree.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet. edu/departments/curriculum/articulation.php?levelone=colleges.

Major/Area Requirements		(16 credits)
CST 118	Microsoft Command Line Fundamentals	2
CST 150 or	Computer Systems Technology I	
CST 160	Computer Technology I	4-5
CST 155 or	Computer Systems Technology II	
CST 165	Computer Technology II	4-5
CST 225	PC Networking	3
BMG 205 or	Creating the Customer Experience	
CST 174 or	CST Co-op I	
CST 270	Data Recovery and Analysis	3-4

Minimum Credits Required for the Program: **16**

Welding (CTWLDC)
Certificate
Program Effective Term: **Fall 2013**

This program prepares students for entry-level jobs involving gas welding, brazing, and various combinations of arc welding processes, where they work under the supervision of an experienced welding technician. The program also gives students a foundation for WCC's Advanced Certificate in Welding Mechanics.

Articulation:
Eastern Michigan University, several BS degrees.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/departments/curriculum/articulation.php?levelone=colleges.

Major/Area Requirements		(21 credits)
WAF 105	Introduction to Welding Processes	2
WAF 106	Blueprint Reading for Welders	3
WAF 111	Oxy-fuel Welding	4
WAF 112	Shielded Metal Arc Welding	4
WAF 123	Advanced Oxy-fuel Welding	4
WAF 124	Advanced Shielded Metal Arc Welding	4

Minimum Credits Required for the Program: **21**

School of Apprenticeship and Occupational Studies

Find a trade-related associate's degree program that builds on your professional abilities while giving you the knowledge and skills needed to move into organizational leadership.

Washtenaw Community College offers programs at several levels for students who want to begin new careers, or advance in their existing careers. The first level is the certificate, which can vary from nine to thirty-six credits, depending on the field. Certificates generally prepare students for entry-level jobs.

The next level, an Associate in Applied Science, is available for some programs.

Alternatively, students can earn an AAS in Occupational Studies by completing a certificate and General Education requirements.

Apprenticeship and Occupational Studies

These individualized programs utilize earned certificates, apprenticeships and trade-related credits tailored to the needs of the student. The Occupational Studies degree offers the flexibility to combine certain certificate programs with general education courses and electives to develop an individualized Associate in Applied Science degree.

Apprentice Completion (CTAC)
Certificate
Program Effective Term: Fall 2013

This program gives skilled tradespersons who are sponsored by qualified organizations the opportunity to apply trade-related credits from their apprenticeship programs toward a WCC Certificate. Students must be sponsored by a qualified organization to enroll in this program.

Requirements	(24 credits)
Complete sponsored apprenticeship program in technical or trade-related coursework.	24-36

Minimum Credits Required for the Program: **24**

Notes:

*See a program advisor to determine the courses for this certificate.

Journeyman Industrial (APJPIM)
Associate in Applied Science Degree
Program Effective Term: Fall 2013

Some employers require or prefer employees to have an associate degree as a condition for employment or for advancement. Students can earn an Associate in Applied Science Degree in Journeyman Industrial by completing the requirements listed.

Articulation:
Eastern Michigan University, BS degree.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/departments/curriculum/articulation.php?levelone=colleges.

General Education Requirements		(21 credits)
Writing	Elective(s)	3-4
Speech	Elective(s)	3
Math	Elective(s)	3-4
Nat. Sci.	Elective(s)	3-4
Soc. Sci.	Elective(s)	3
Arts/Human.	Elective(s)	3
Computer Lit.	Elective(s)	3

Major/Area Requirements		(39 credits)
	Complete the Apprenticeship Completion Certificate (CTAC), or journeyman-approved coursework in a technical or trade-related area	24-36
Elective	Take additional credits as needed if total program credits are below 60.	15

Minimum Credits Required for the Program: **60**

Occupational Studies (APOST)
Associate in Applied Science Degree
Program Effective Term: **Fall 2013**

This program allows students to earn an Associate in Applied Science degree by building on occupational/technical courses and certificates. This option can be selected if an associate degree is required or preferred as a condition for employment or advancement in a field. The program also allows students to combine coursework from several occupational areas to prepare for a job that requires multidisciplinary skills. If in completing this program, students earn an occupational certificate of 20 credits* or more that does not already lead to an associate degree program, they can request to have the certificate title substituted for "Occupational Studies" as the title of the degree program. Meet with a divisional counselor or faculty advisor for assistance in developing a program of study. A counselor can help determine career interests and educational goals, as well as provide transfer and career information.

Articulation:
Eastern Michigan University, several BS degrees;
Ferris State University, BS degree;
National Labor College, Bachelor degree.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/departments/curriculum/articulation.php?levelone=colleges.

General Studies Program Requirements	(60 credits)
Complete the General Education Requirements for the Associate in Applied Science Degree:	21-24
Writing (3-4)	
Speech (3)	
Math (3-4)	
Nat. Sci. (3-4)	
Soc. Sci. (3)	
Arts/Human. (3)	
Computer Lit. (3)	
Complete a minimum of 20 credits in an occupational/technical area*	20
Complete additional coursework as free electives to bring the total to a minimum of 60 credits	19

Minimum Credits Required for the Program: **60**

Notes:

*If a student completes an occupational certificate program of 20 credits or more, they may request to have the certificate title substituted for "Occupational Studies" as the title of their degree program. This applies only to certificates that do not already lead to an AAS degree program.

Articulated Union Building Trade Apprenticeship Programs
These programs are restricted to members of approved union building trade apprenticeship programs, including United Association (UA).

Construction Supervision (CTCNS)
Certificate
Program Effective Term: **Fall 2013**

This Construction Supervision Certificate program enables apprentice and journey-level members of the articulated union building trade apprenticeship programs to enter the job market with knowledge and skills in planning, organizing and supervising construction projects. This certificate provides an option for those who want to attain a higher position in the construction field and for those desiring to start their own companies.

Articulation:
Eastern Michigan University, several BS degrees.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/departments/curriculum/articulation.php?levelone=colleges.

Program Admission Requirements:
The program is only open to active members of articulated union building trade apprenticeship programs.

Major/Area Requirements		(15 credits)
UAS 111	Construction Supervision I: Motivating Employees	3
UAS 122	Construction Supervision II: Supervisory Skills	3
UAS 210	Construction Supervision III: Legal and Personnel Aspects	3
UAS 222	Construction Supervision IV: The Construction Project	3
UAS 230	Construction Supervision V: Scheduling and Project Management	3

Minimum Credits Required for the Program: **15**

Construction Supervision (APCNSP)
Associate in Applied Science Degree
Program Effective Term: Fall 2013

This program gives apprentice and journey-level members of the articulated union building trade apprenticeship programs the opportunity to apply their apprenticeship training and trade-related experience toward an associate's degree in Construction Supervision. In addition to the courses in Construction Supervision, students will complete general education courses and receive nontraditional credit for their work experience and apprenticeship.

Students must complete an apprenticeship program concentration in plumbing, pipefitting, HVAC, sprinkler fitting, ironworking, bricklaying, tile setting or other approved union building trade. Upon completion of this, students should apply for non-traditional credit evaluation of their apprenticeship experiences to meet the apprentice program concentration requirement (19-26 credits).

Architectural and Ornamental Ironworker (AOIW)
IWA 120
IWA 122
IWA 131
IWA 161
IWA 201
IWA 224
IWA 265

Brick and Block Laying Apprenticeship (BBLA)
BAC 100
BAC 101
BAC 102
BAC 110
BAC 111
BAC 112
BAC 210
BAC 211
BAC 212
BAC 213

HVAC Specialty (HVTC)
UAE 140
UAE 142
UAE 144
UAE 146
UAE 148
UAE 150
UAE 152
UAE 154
UAE 156
UAE 158

Journeyman Ironworker (JMIW)
IWA 120
IWA 122
IWA 131
IWA 141
IWA 155
IWA 161
IWA 172
IWA 201
IWA 224
IWA 272

Metal Building Erector (MTBE)
IWA 120
IWA 122
IWA 131
IWA 161

IWA 172
IWA 201
IWA 224
IWA 235

Pipefitter Specialty (PIPE)
UAF 102
UAF 120
UAF 122
UAF 124
UAF 126
UAF 128
UAF 130
UAF 132
UAF 134
UAF 136

Plumber Specialty (PLUM)
UAP 100
UAP 102
UAP 104
UAP 106
UAP 108
UAP 110
UAP 112
UAP 114
UAP 116
UAP 118

Reinforcing Ironworker (REIW)
IWA 120
IWA 122
IWA 141
IWA 201
IWA 224
IWA 241

Rigger/Machinery Mover (RGMM)
IWA 120
IWA 122
IWA 151
IWA 155
IWA 191
IWA 201
IWA 224

Sprinkler Fitter Specialty (SPRF)
UAR 160
UAR 162
UAR 164
UAR 166
UAR 168
UAR 170
UAR 172
UAR 174
UAR 176
UAR 178

Tile Mechanics (TILM)
BAC 100
BAC 101
BAC 102
BAC 120
BAC 121
BAC 122
BAC 220

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BAC 221
BAC 222
BAC 223

Articulation:
Davenport University, Bachelor degree;
Eastern Michigan University, several BS degrees;
National Labor College, Bachelor degree.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site:
http://www.wccnet.edu/departments/curriculum/articulation.php?levelone=colleges.

Program Admission Requirements:
The program is only open to active members of articulated union building trade apprenticeship programs.

First Semester		(14 credits)
UAS 111	Construction Supervision I: Motivating Employees	3
	Computer Lit. Elective(s)	3
	Math Elective(s)*	3
	Union Approved Apprenticeship	5

Second Semester		(15 credits)
UAS 122	Construction Supervision II: Supervisory Skills	3
UAS 210	Construction Supervision III: Legal and Personnel Aspects	3
	Speech Elective(s)**	3
	Arts/Human. Elective(s)	3
	Union Approved Apprenticeship	3

Third Semester		(15 credits)
UAS 222	Construction Supervision IV: The Construction Project	3
	Nat. Sci. Elective(s)***	3
	Soc. Sci. Elective(s)	3
	Union Approved Apprenticeship	6

Fourth Semester		(16 credits)
UAS 230	Construction Supervision V: Scheduling and Project Management	3
	Union Approved Apprenticeship	9
	Writing Elective(s)	4

Minimum Credits Required for the Program: **60**

Notes:

* UA students may use APP 113 Math for Pipe Trades (3 credits)
**UA students may use UAT 210 Public Speaking (1.5 credits) and UAT 213 Planning and Presenting Lessons (1.5 credits)
*** UA students may use SCI 102 Applied Science (3 credits)

Industrial Training (APITRN)
Associate in Applied Science Degree
Program Effective Term: Fall 2013

This program gives indentured journeymen of the United Association or Ironworkers, the opportunity to apply their work as certified apprentice instructors toward an associate in applied science degree in Industrial Training. Students will complete the general education courses, five summer instructor training sessions, and receive non-traditional credits for experience in an area of specialization such as plumbing, pipefitting, HVAC, sprinkler fitting and ironworking.

Articulation:
Eastern Michigan University, several BS degrees;
National Labor College, Bachelor degree.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site:
http://www.wccnet.edu/departments/curriculum/articulation.php?levelone=colleges.

Program Admission Requirements:
Open only to United Association and Ironworker instructors.

General Education Requirements		(22 credits)
Writing	Elective(s)	4
UAT 210	Public Speaking*	1.5
UAT 213	Planning and Presenting Lessons*	1.5
Math	Elective(s)**	3
Nat. Sci.	Elective(s)**	3
Soc. Sci.	Elective(s)	3
Arts/Human.	Elective(s)	3
Computer Lit.	Elective(s)	3

Students may choose any WCC courses that meet the speech requirement. Only applies to UA programs.
**APP 113 Math for Pipe Trades and SCI 102 Applied Science are included in UA specializations.*

Major/Area Requirements	(19 credits)
UA students must complete 12-15 additional credits from a combination of required teaching methods courses and technical update courses (UAT courses).	12-15
Ironworker students must complete 15 credits from a combination of required teaching methods courses and technical update courses (IWT courses).	
Complete electives (0-7 credits) to meet a minimum of 60 credits.	7

Minimum Option Credits Required for the Program: **19**
Complete a specialization in plumbing, pipefitting, HVAC, sprinkler fitting or ironworking. Students should apply for non-traditional credit evaluation of their apprenticeship experiences to meet this requirement.

Industrial Training Options

Architectural and Ornamental Ironworker (AOIW)		(19 credits)
IWA 120	Introduction to Ironwork	3
IWA 122	Ironworker - General Rigging	2
IWA 131	Introduction to Metal Building	2
IWA 161	Introduction to Architectural and Ornamental Ironwork	2
IWA 201	Introduction to Welding	3
IWA 224	Labor and Trade History	1
IWA 265	Advanced Architectural and Ornamental Ironwork	6

HVAC Specialty (HVTC)		(26 credits)
UAE 140	Introduction to HVACR Service Technician Practices	3
UAE 142	Soldering and Brazing	3
UAE 144	Refrigeration	2
UAE 146	Air Conditioning	2
UAE 148	Electrical Controls	2
UAE 150	DC Electronics	2
UAE 152	Advanced Electrical Controls and Pneumatic Controls	3

UAE 154	Advanced Air Conditioning and Refrigeration	3
UAE 156	Air and Water Balancing and Motor Alignment	3
UAE 158	Advanced HVACR Practices	3

Journeyman Ironworker (JMIW)		**(26 credits)**
IWA 120	Introduction to Ironwork	3
IWA 122	Ironworker - General Rigging	2
IWA 131	Introduction to Metal Building	2
IWA 141	Introduction to Reinforcing Ironwork	3
IWA 155	Rigging/Machinery Mover II	3
IWA 161	Introduction to Architectural and Ornamental Ironwork	2
IWA 172	Introduction to Structural Features	4
IWA 201	Introduction to Welding	3
IWA 224	Labor and Trade History	1
IWA 272	Advanced Structural Features	3

Metal Building Erector (MTBE)		**(19 credits)**
IWA 120	Introduction to Ironwork	3
IWA 122	Ironworker - General Rigging	2
IWA 131	Introduction to Metal Building	2
IWA 161	Introduction to Architectural and Ornamental Ironwork	2
IWA 172	Introduction to Structural Features	4
IWA 201	Introduction to Welding	3
IWA 224	Labor and Trade History	1
IWA 235	Advanced Metal Building	2

Pipefitter Specialty (PIPE)		**(26 credits)**
UAF 102	Introduction to Arc Welding, Soldering, and Brazing	3
UAF 120	Introduction to Pipefitter Practices	3
UAF 122	Drawing Interpretation and Plan Reading	2
UAF 124	Oxy Fuel Cutting and Shielded Arc Welding	2
UAF 126	Hydronic Heating and Steam Systems	2
UAF 128	Refrigeration and Electrical Controls	2
UAF 130	Advanced SMAW Welding	3
UAF 132	Advanced Pipefitter Topics	3
UAF 134	Controls and Instrumentation	3
UAF 136	GTAW Welding	3

Plumber Specialty (PLUM)		**(26 credits)**
UAP 100	Introduction to Plumbing Practices	3
UAP 102	Introduction to Arc Welding, Soldering and Brazing	3
UAP 104	Drawing Interpretation and Plan Reading	2
UAP 106	Oxy Fuel Cutting and Shielded Arc Welding	2
UAP 108	Water Supply and Drainage	2
UAP 110	Customer Service Techniques	2
UAP 112	Plumbing Fixtures and Appliances	3
UAP 114	Plumbing Codes and Regulations	3
UAP 116	Medical Gas and Backflow Prevention Techniques	3
UAP 118	Advanced Plumbing Practices	3

Reinforcing Ironworker (REIW)		**(19 credits)**
IWA 120	Introduction to Ironwork	3
IWA 122	Ironworker - General Rigging	2
IWA 141	Introduction to Reinforcing Ironwork	3
IWA 201	Introduction to Welding	3
IWA 224	Labor and Trade History	1
IWA 241	Advanced Reinforcing Ironwork	7

Rigger/Machinery Mover (RGMM)		**(19 credits)**
IWA 120	Introduction to Ironwork	3
IWA 122	Ironworker - General Rigging	2
IWA 151	Rigging/Machinery Mover I	3
IWA 155	Rigging/Machinery Mover II	3
IWA 191	Reinforced Iron and Structures for Rigging	4
IWA 201	Introduction to Welding	3
IWA 224	Labor and Trade History	1

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Sprinkler Fitter Specialty (SPRF)		(26 credits)
UAR 160	Introduction to Sprinkler Fitter Practices	3
UAR 162	Basic Drawing and Introduction to Automatic Sprinklers	3
UAR 164	Reading Automatic Sprinkler Piping Drawings	2
UAR 166	Installation of Sprinkler Systems	2
UAR 168	Architectural Working Drawings and Blueprint Reading for Sprinkler Fitters	2
UAR 170	Sprinkler Water Supply and The Automatic Sprinkler	2
UAR 172	Types of Fire Protection Systems and Alarms	3
UAR 174	Special Application Sprinkler Systems and Hydraulics	3
UAR 176	Human Relations	3
UAR 178	Technical Writing	3

Trade Related Elective Credits (TRI)		(19 credits)
	TRI Trade Related Elective Credits	19-26

Minimum Credits Required for the Program: **60**

Construction Supervision (ASCNSV)
Associate in Science Degree
Program Effective Term: Fall 2013

This program gives apprentice and journey-level members of the articulated union building trade apprenticeship programs the opportunity to apply their apprenticeship training and trade-related experience toward an associate's degree in Construction Supervision. In addition to the courses in Construction Supervision, students will complete general education courses and receive nontraditional credit for their work experience and apprenticeship.

Students must complete an apprenticeship program concentration in plumbing, pipefitting, HVAC, sprinkler fitting, ironworking, bricklaying, tile setting or other approved union building trade. Upon completion of this, students should apply for non-traditional credit evaluation of their apprenticeship experiences to meet the apprentice program concentration requirement (19-26 credits).

Architectural and Ornamental Ironworker (AOIW)
IWA 120
IWA 122
IWA 131
IWA 161
IWA 201
IWA 224
IWA 265

Brick and Block Laying Apprenticeship (BBLA)
BAC 100
BAC 101
BAC 102
BAC 110
BAC 111
BAC 112
BAC 210
BAC 211
BAC 212
BAC 213

HVAC Specialty (HVTC)
UAE 140
UAE 142
UAE 144
UAE 146
UAE 148
UAE 150
UAE 152
UAE 154
UAE 156
UAE 158

Journeyman Ironworker (JMIW)
IWA 120
IWA 122
IWA 131
IWA 141
IWA 155
IWA 161
IWA 172
IWA 201
IWA 224
IWA 272

Metal Building Erector (MTBE)
IWA 120
IWA 122
IWA 131
IWA 161

IWA 172
IWA 201
IWA 224
IWA 235

Pipefitter Specialty (PIPE)
UAF 102
UAF 120
UAF 122
UAF 124
UAF 126
UAF 128
UAF 130
UAF 132
UAF 134
UAF 136

Plumber Specialty (PLUM)
UAP 100
UAP 102
UAP 104
UAP 106
UAP 108
UAP 110
UAP 112
UAP 114
UAP 116
UAP 118

Reinforcing Ironworker (REIW)
IWA 120
IWA 122
IWA 141
IWA 201
IWA 224
IWA 241

Rigger/Machinery Mover (RGMM)
IWA 120
IWA 122
IWA 151
IWA 155
IWA 191
IWA 201
IWA 224

Sprinkler Fitter Specialty (SPRF)
UAR 160
UAR 162
UAR 164
UAR 166
UAR 168
UAR 170
UAR 172
UAR 174
UAR 176
UAR 178

Tile Mechanics (TILM)
BAC 100
BAC 101
BAC 102
BAC 120
BAC 121
BAC 122
BAC 220

BAC 221
BAC 222
BAC 223

Articulation:
Davenport University, Bachelor degree;
Eastern Michigan University, several BS degrees;
International Masonry Institute, Certified Masonry Construction program;
National Labor College, Bachelor degree.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site:
http://www.wccnet.edu/departments/curriculum/articulation.php?levelone=colleges.

Program Admission Requirements:
The program is only open to active members of articulated union building trade apprenticeship programs.

First Semester		(17 credits)
UAS 111	Construction Supervision I: Motivating Employees	3
	MTH 160 or MTH 169 or higher level MTH course	4
	Computer Lit. Elective(s)	3
	Writing 1 Elective(s)	4
	Union Approved Apprenticeship	3

Second Semester		(16 credits)
UAS 122	Construction Supervision II: Supervisory Skills	3
UAS 210	Construction Supervision III: Legal and Personnel Aspects	3
	Arts/Human. 1 Elective(s)	3
	Soc. Sci. 1 Elective(s)	3
	Union Approved Apprenticeship	4

Third Semester		(17 credits)
UAS 222	Construction Supervision IV: The Construction Project	3
	Arts/Human. 2 Elective(s)	3
	Nat. Sci. Must contain a lab	4
	Writing 2 Elective(s)	3
	Union Approved Apprenticeship	4

Fourth Semester		(17 credits)
UAS 230	Construction Supervision V: Scheduling and Project Management	3
	Soc. Sci 2 Elective(s)	3
	Speech Elective(s)*	3
	Union Approved Apprenticeship	8

Minimum Credits Required for the Program: **67**

Notes:

*UA students may use UAT 210 Public Speaking (1.5 credits) and UAT 213 Planning and Presenting Lessons (1.5 credits)

Industrial Training (ASINDT)
Associate in Science Degree
Program Effective Term: Fall 2013

This program gives indentured journeymen of the United Association or Ironworkers, the opportunity to apply their work as certified apprentice instructors toward an associate in science degree in Industrial Training. Students will complete the general education courses, five summer instructor training sessions, and receive non-traditional credits for experience in an area of specialization such as plumbing, pipefitting, HVAC, sprinkler fitting and ironworking.

Articulation:
Eastern Michigan University, several BS degrees;
Ferris State University, Bachelor degree;
National Labor College, Bachelor degree.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site:
http://www.wccnet.edu/departments/curriculum/articulation.php?levelone=colleges.

Program Admission Requirements:
Open only to United Association and Ironworker instructors.

General Education Requirements		(30 credits)
Writing	Elective(s)	6-7
UAT 210	Public Speaking*	1.5
UAT 213	Planning and Presenting Lessons*	1.5
Math	MTH 169 or higher	3-4
Nat. Sci.	Must contain a lab	3-4
Soc. Sci.	Elective(s)	6
Arts/Human.	Elective(s)	6
Computer Lit.	Elective(s)	3

Students may choose any WCC courses that meet the speech requirement. Only applies to UA programs.

Major/Area Requirements		(12 credits)
	UA students must complete 12-15 additional credits from a combination of required teaching methods courses and technical update courses (UAT courses).	12-15
	Ironworker students must complete 15 credits from a combination of required teaching methods courses and technical update courses (IWT courses).	

Minimum Option Credits Required for the Program: **19**
Complete a specialization in plumbing, pipefitting, HVAC, sprinkler fitting or ironworking. Students should apply for non-traditional credit evaluation of their apprenticeship experiences to meet the specialization requirement.

Industrial Training Options

Architectural and Ornamental Ironworker (AOIW)		(19 credits)
IWA 120	Introduction to Ironwork	3
IWA 122	Ironworker - General Rigging	2
IWA 131	Introduction to Metal Building	2
IWA 161	Introduction to Architectural and Ornamental Ironwork	2
IWA 201	Introduction to Welding	3
IWA 224	Labor and Trade History	1
IWA 265	Advanced Architectural and Ornamental Ironwork	6

HVAC Specialty (HVTC)		(26 credits)
UAE 140	Introduction to HVACR Service Technician Practices	3
UAE 142	Soldering and Brazing	3
UAE 144	Refrigeration	2
UAE 146	Air Conditioning	2
UAE 148	Electrical Controls	2
UAE 150	DC Electronics	2
UAE 152	Advanced Electrical Controls and Pneumatic Controls	3
UAE 154	Advanced Air Conditioning and Refrigeration	3
UAE 156	Air and Water Balancing and Motor Alignment	3
UAE 158	Advanced HVACR Practices	3

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Journeyman Ironworker (JMIW) (26 credits)

IWA 120	Introduction to Ironwork	3
IWA 122	Ironworker - General Rigging	2
IWA 131	Introduction to Metal Building	2
IWA 141	Introduction to Reinforcing Ironwork	3
IWA 155	Rigging/Machinery Mover II	3
IWA 161	Introduction to Architectural and Ornamental Ironwork	2
IWA 172	Introduction to Structural Features	4
IWA 201	Introduction to Welding	3
IWA 224	Labor and Trade History	1
IWA 272	Advanced Structural Features	3

Metal Building Erector (MTBE) (19 credits)

IWA 120	Introduction to Ironwork	3
IWA 122	Ironworker - General Rigging	2
IWA 131	Introduction to Metal Building	2
IWA 161	Introduction to Architectural and Ornamental Ironwork	2
IWA 172	Introduction to Structural Features	4
IWA 201	Introduction to Welding	3
IWA 224	Labor and Trade History	1
IWA 235	Advanced Metal Building	2

Pipefitter Specialty (PIPE) (26 credits)

UAF 102	Introduction to Arc Welding, Soldering, and Brazing	3
UAF 120	Introduction to Pipefitter Practices	3
UAF 122	Drawing Interpretation and Plan Reading	2
UAF 124	Oxy Fuel Cutting and Shielded Arc Welding	2
UAF 126	Hydronic Heating and Steam Systems	2
UAF 128	Refrigeration and Electrical Controls	2
UAF 130	Advanced SMAW Welding	3
UAF 132	Advanced Pipefitter Topics	3
UAF 134	Controls and Instrumentation	3
UAF 136	GTAW Welding	3

Plumber Specialty (PLUM) (26 credits)

UAP 100	Introduction to Plumbing Practices	3
UAP 102	Introduction to Arc Welding, Soldering and Brazing	3
UAP 104	Drawing Interpretation and Plan Reading	2
UAP 106	Oxy Fuel Cutting and Shielded Arc Welding	2
UAP 108	Water Supply and Drainage	2
UAP 110	Customer Service Techniques	2
UAP 112	Plumbing Fixtures and Appliances	3
UAP 114	Plumbing Codes and Regulations	3
UAP 116	Medical Gas and Backflow Prevention Techniques	3
UAP 118	Advanced Plumbing Practices	3

Reinforcing Ironworker (REIW) (19 credits)

IWA 120	Introduction to Ironwork	3
IWA 122	Ironworker - General Rigging	2
IWA 141	Introduction to Reinforcing Ironwork	3
IWA 201	Introduction to Welding	3
IWA 224	Labor and Trade History	1
IWA 241	Advanced Reinforcing Ironwork	7

Rigger/Machinery Mover (RGMM) (19 credits)

IWA 120	Introduction to Ironwork	3
IWA 122	Ironworker - General Rigging	2
IWA 151	Rigging/Machinery Mover I	3
IWA 155	Rigging/Machinery Mover II	3
IWA 191	Reinforced Iron and Structures for Rigging	4
IWA 201	Introduction to Welding	3
IWA 224	Labor and Trade History	1

Sprinkler Fitter Specialty (SPRF) (26 credits)

UAR 160	Introduction to Sprinkler Fitter Practices	3
UAR 162	Basic Drawing and Introduction to Automatic Sprinklers	3

UAR 164	Reading Automatic Sprinkler Piping Drawings	2
UAR 166	Installation of Sprinkler Systems	2
UAR 168	Architectural Working Drawings and Blueprint Reading for Sprinkler Fitters	2
UAR 170	Sprinkler Water Supply and The Automatic Sprinkler	2
UAR 172	Types of Fire Protection Systems and Alarms	3
UAR 174	Special Application Sprinkler Systems and Hydraulics	3
UAR 176	Human Relations	3
UAR 178	Technical Writing	3

Trade Related Elective Credits (TRI)   **(19 credits)**

Trade Related Elective Credits (19-26)   19-26

Minimum Credits Required for the Program: **61**

HVAC

Whether you are working on residential or commercial equipment these programs prepare you for a career in the Heating, Ventilation, Air Conditioning and Refrigeration Industry.

Accelerated Training in HVACR (CTAHTR)
Certificate
Program Effective Term:　　　　**Fall 2013**

This program focuses on HVACR training. Safety, installation, service and equipment troubleshooting will be the key objectives. The class will be taught from Local Union training centers or mobile training centers to allow the United Association to offer the program where the demand for these skills are the greatest. This program is limited to students who are selected by the United Association for program participation.

Program Admission Requirements:
-Must be at least 18 years old
-High school diploma or General Education Development (GED) certificate
-Valid driver's license
-Pass a urinalysis drug test
-Eligible students who are selected by the United Association for program participation

Major/Area Requirements		**(12 credits)**
UAE 165	Accelerated HVACR Training	12

Minimum Credits Required for the Program:　　　　　　　　　　　　　　**12**

United Association of Journeymen and Apprentices of the Plumbing and Pipefitting Industry of the United States and Canada

These programs are restricted to members of the United Association of Journeymen and Apprentices of the Plumbing and Pipefitting Industry of the United States and Canada.

Sustainable Technologies in HVACR (APSTH)
Associate in Applied Science Degree
Program Effective Term: Fall 2013

The Sustainable Technologies in HVACR program is designed for journeyman level HVACR technicians who are ready to complete their associate's degree. This program covers advanced electrical and Direct Digital Controls and covers current and emerging green technologies. The program also focuses on the customer experience, including managing customer relationships and written communications. This program prepares students to take the Green Energy Awareness certification test sponsored by the Green Mechanical Council.

Complete an apprenticeship program concentration in HVAC. Upon completion of this, students should apply for non-traditional credit evaluation of their apprenticeship experiences to meet the apprentice program concentration requirement (26 credits).

HVAC Specialty (HVTC)
UAE 140 Introduction to HVACR Service Technician Practices
UAE 142 Soldering and Brazing
UAE 144 Refrigeration
UAE 146 Air Conditioning
UAE 148 Electrical Controls
UAE 150 DC Electronics
UAE 152 Advanced Electrical Controls and Pneumatic Controls
UAE 154 Advanced Air Conditioning and Refrigeration
UAE 156 Air and Water Balancing and Motor Alignment
UAE 158 Advanced HVACR Practices

Articulation:
Eastern Michigan University, BS degree.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet. edu/departments/curriculum/articulation.php?levelone=colleges.

Continuing Eligibility Requirements:
Students must maintain a minimum grade of "C."

First Semester		(13 credits)
BMG 205	Creating the Customer Experience	3
MTH 169	Intermediate Algebra	4
UAE 210	Advanced Electronics and DDC Systems	3
UAE 220	Environmental Technology in HVACR	3

Second Semester		(13 credits)
ENG 100	Introduction to Technical and Workplace Writing	4
	Computer Lit. Elective(s)	3
	Soc. Sci. Elective(s)	3
	Speech Elective(s)	3

Third Semester		(3 credits)
	Arts/Human. Elective(s)	3

Major/Area Requirements		(32 credits)
	UA Apprenticeship Credits*	32

Minimum Credits Required for the Program: **61**

Notes:

*SCI 102 is included in the apprenticeship credits and fulfills the natural science requirement.

Welding and Fabrication
Learn skills from beginning welding to advanced fabrication for a career as a welding maintenance mechanic.

Program Information Report

Accelerated Training in Welding (CTAWTR)
Certificate
Program Effective Term: **Fall 2013**

This program focuses on Gas Tungsten Arc Welding, Shielded Metal Arc Welding and Oxy-fuel Cutting processes for the pipe fitting industry. After completion of this program, students will be admissible into an apprenticeship program at a second-year level. This program is limited to students who are selected by the United Association for program participation.

Applying for Admission to the Program:
Classes are taught at unions throughout the United States. Students must provide their own personal protective equipment for the class. Students must also provide their own room and board.

Program Admission Requirements:
-Must be at least 18 years old
-High school diploma or General Education Development (GED) certificate
-Valid driver's license
-Documentation of an eye exam that was administered within the past 6 months that shows acceptable near distance vision and depth perception
-Pass a urinalysis drug test
-Eligible students who are selected by the United Association for program participation

Major/Area Requirements	(12 credits)
UAF 190 Accelerated Welder Training	12

Minimum Credits Required for the Program: **12**

School of Automotive and Motorcycle Technology

If you are looking for the best technical training in the automotive or motorcycle field, WCC's School of Automotive and Motorcycle Technology is the place for you. Whether your focus is finding employment as a technician, learning about performance equipment, or creating a custom look, our introductory and advanced certificate programs, as well as associate degrees, will enhance your personal and professional qualifications. These programs offer the perfect blend of classroom and hands-on education not available in many other educational settings.

Washtenaw Community College offers programs at several levels for students who want to begin new careers, or advance in their existing careers. The first level is the certificate, which can vary from nine to thirty-six credits, depending on the field. Certificates generally prepare students for entry-level jobs.

After completing a certificate, students can progress to the next level, the advanced certificate. The credit hours required for these programs also vary. This type of certificate provides a more specialized level of skill development, and often allows students to upgrade their positions at their places of employment.

The next level, an Associate in Applied Science, is available for some programs. For some career fields, it is possible to earn a certificate, advanced certificate (if one exists), and an Associate in Applied Science degree in the same field. In these cases, the credit hours from the certificate and advanced certificate can be applied to the credit hours needed for the Associate in Applied Science degree.

Alternatively, students can earn an AAS in Occupational Studies by completing a certificate, advanced certificate and General Education requirements.

Auto Body Repair

These certificates prepare the student for various positions in the auto body repair industry.

Auto Body Repair (CTAUBR)
Certificate
Program Effective Term: **Fall 2013**

This certificate will appeal to a wide array of automobile enthusiasts. Only aspiring body technicians and painters, individuals with an interest in custom cars, hobbyists, and those wishing to start a career in the collision repair industry, need apply. Through the use of NATEF approved curriculum, students will develop core skills such as dent removal, panel replacement, welding, and automobile refinishing techniques and collision-related mechanical repair. Emphasis is placed on preparing students for employment in an ever-changing workplace that adheres to A.S.E. and I-Car standards associated with the collision repair industry. This certificate also provides a stepping-stone to WCC's Advanced Auto Body certificates.

Articulation:
Eastern Michigan University, several BS degrees.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/departments/curriculum/articulation.php?levelone=colleges.

Major/Area Requirements		(20 credits)
Elective	Must take 5 classes totaling 20 credits:	
ABR 111	Introduction to Auto Body Repair	4
ABR 112	Introduction to Automotive Refinishing	4
ABR 123	Technical Auto Body Repair	4
ABR 124	Technical Automotive Refinishing	4
ABR 113 or	Estimating and Shop Operations	
ABR 135	Collision-Related Mechanical and Electrical Repairs	4

Required Support Courses		(10 credits)
Elective	Take an additional 10 credits from the list below. Courses taken to meet the 20 credits for the Major/Area Requirements may not be selected:	
ABR 113 or	Estimating and Shop Operations	
ABR 114 or	Applied Auto Body Welding	
ABR 116 or	The Evolution of the Automobile	
ABR 119 or	The Art of Metal Shaping	
ABR 130 or	Custom Painting	
ABR 135 or	Collision-Related Mechanical and Electrical Repairs	
ABR 174 or	ABR Co-op Education I	
ABR 230 or	Advanced Auto Body V: Advanced Auto Refinish Applications	
ABR 231 or	Project Management and Implementation in Auto Body	
ABR 274	ABR Co-op Education II	10

Minimum Credits Required for the Program: **30**

Automotive Services

The automotive certificate prepares the student for work as an automotive services technician, diagnosing and repairing malfunctions in automobile systems.

Program Information Report

Automotive Services Technician (CTASVT)
Certificate
Program Effective Term: Fall 2013

This program prepares students for employment as a certified automotive technician. Students will diagnose and repair malfunctions in automobile engines, suspensions and steering systems, brakes, electrical and electronic systems and engine drivability issues. This program also offers opportunities to explore vehicle performance, diesel, alternative fuel vehicles, hybrid vehicles and to participate in the building of performance vehicles. The program prepares the student for the State of Michigan Mechanic Certification tests as well as the National Institute for Automotive Service Excellence (ASE) Certification Exams.

Articulation:
Eastern Michigan University, several BS degrees.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/departments/curriculum/articulation.php?levelone=colleges.

Major/Area Requirements		(36 credits)
ASV 151	Automotive Service I	4
ASV 152	Automotive Service II	4
ASV 153	Automotive Service III	4
ASV 154	Automotive Service IV	4
ASV 155	Automotive Service V	4
ASV 254	Suspension and Steering	2
ASV 255	Brakes	2
ASV 256	Electrical and Electronic Systems	4
ASV 258	Engine Drivability	2
	Select 2 credits from the following: ABR 116, ASV 157, MTT 102, WAF 105	2
	Select 4 credits from the following: ASV 157, ASV 174, ASV 251, ASV 252, ASV 253, ASV 257, ASV 259, ASV 261, ASV 262, ASV 263, ASV 269	4

Minimum Credits Required for the Program: **36**

Program Information Report

Automotive Service Technology (APASRV)
Associate in Applied Science Degree
Program Effective Term: **Fall 2013**

This AAS degree program prepares students for employment in an automotive related technical position or as a certified automotive technician. Students will diagnose and repair malfunctions in automobile engines, suspensions and steering systems, brakes, electrical and electronic systems and engine drivability issues. This program also offers opportunities to explore vehicle performance, diesel, alternative fuel and hybrid vehicles and to participate in the building of performance vehicles. The program prepares the student for the State of Michigan Mechanic Certification tests as well as the National Institute for Automotive Service Excellence (ASE) Certification Exams.

First Semester		(16 credits)
ASV 151	Automotive Service I	4
ASV 152	Automotive Service II	4
	Math Elective(s)	3-4
	Writing Elective(s)	3-4
	Select 2 credits: ABR 116, ASV 157, MTT 102 or WAF 105	2

Second Semester		(15 credits)
ASV 153	Automotive Service III	4
ASV 154	Automotive Service IV	4
ASV 155	Automotive Service V	4
	Computer Lit. Elective (s)	3

Third Semester		(16 credits)
ASV 254	Suspension and Steering	2
ASV 255	Brakes	2
ASV 256	Electrical and Electronic Systems	4
ASV 258	Engine Drivability	2
	Speech	3
	Arts/Human. Elective(s)	3

Fourth Semester		(13 credits)
	Nat. Sci. Elective(s)	3
	Soc. Sci. Elective(s)	3
	Restricted Elective(s) Select 4 credits from: ASV 157, ASV 174, ASV 251, ASV 252, ASV 253, ASV 257, ASV 259, ASV 261, ASV 262, ASV 263 or ASV 269	4
	Elective Complete electives to total 60 credits	3

Minimum Credits Required for the Program:	**60**

Motorcycle Service Technology

Prepare for a career as a motorcycle mechanic or build upon skills already developed.

Motorcycle Service Technology I (CTMST1)
Certificate
Program Effective Term: **Fall 2013**

This purpose of the Motorcycle Service Technology I program is to provide the student with fundamental certification as a motorcycle technician. The student will receive skill training in service department operations, vehicle set-up, mileage-based maintenances, and damage repair estimating. Areas of instruction include; troubleshooting, diagnosing, servicing, and the repair of primary and final drive systems, transmissions, brakes, suspensions, electrical, and induction systems. The program will provide the skills for the student to test for the State of Michigan Motorcycle Mechanics License.

Major/Area Requirements		(20 credits)
MST 110	Motorcycle Service Technology I	4
MST 120	Motorcycle Service Technology II	4
MST 130	Motorcycle Service Technology III	4
MST 140	Motorcycle Service Technology IV	4
MTT 102	Machining for Auto Applications	2
WAF 105	Introduction to Welding Processes	2

Minimum Credits Required for the Program: **20**

Motorcycle Service Technology II (CVMST2)
Advanced Certificate
Program Effective Term: **Fall 2013**

The purpose of the Motorcycle Service Technology II Advanced Certificate program is to improve the student's skills as a motorcycle technician. Emphasis is placed on engine performance technology, dynamometer operations, and welding.

Program Admission Requirements:
Completion of the Motorcycle Service Technology I Certificate.

Major/Area Requirements		(14 credits)
MST 210	Performance Engine Technology	4
MST 220	Dynamometer Operations	4
MST 225	Advanced Dynamometer Tuning Systems	4
WAF 103	Introduction to Gas Tungsten Arc Welding	2

Minimum Credits Required for the Program: **14**

Other Options for Automotive and Motorcycle Technology

Program Information Report

Welding (CTWLDC)
Certificate
Program Effective Term: **Fall 2013**

This program prepares students for entry-level jobs involving gas welding, brazing, and various combinations of arc welding processes, where they work under the supervision of an experienced welding technician. The program also gives students a foundation for WCC's Advanced Certificate in Welding Mechanics.

Articulation:
Eastern Michigan University, several BS degrees.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/departments/curriculum/articulation.php?levelone=colleges.

Major/Area Requirements		(21 credits)
WAF 105	Introduction to Welding Processes	2
WAF 106	Blueprint Reading for Welders	3
WAF 111	Oxy-fuel Welding	4
WAF 112	Shielded Metal Arc Welding	4
WAF 123	Advanced Oxy-fuel Welding	4
WAF 124	Advanced Shielded Metal Arc Welding	4

Minimum Credits Required for the Program: **21**

School of Business and Entrepreneurial Studies

Learn the fundamentals you will need to become a business leader or entrepreneur. These programs help you develop entry-level skills in various aspects of business. Whether your goal is to make your place in an existing industry or branch out on your own, these programs can provide the foundation for success.

Washtenaw Community College offers programs at several levels for students who want to begin new careers, or advance in their existing careers. The first level is the certificate, which can vary from nine to thirty-six credits, depending on the field. Certificates generally prepare students for entry-level jobs.

After completing a certificate, students can progress to the next level, the advanced certificate. The credit hours required for these programs also vary. This type of certificate provides a more specialized level of skill development, and often allows students to upgrade their positions at their places of employment.

The next level, an Associate in Applied Science, is available for some programs. For some career fields, it is possible to earn a certificate, an advanced certificate, and an Associate in Applied Science degree in the same field. In these cases, the credit hours from the certificate and advanced certificate can be applied to the credit hours needed for the Associate in Applied Science degree.

Alternatively, students can earn an AAS in Occupational Studies by completing a certificate, advanced certificate (if one exists) and General Education requirements.

Accounting

Accounting and tax services, CPA firms and small businesses need employees with accounting skills. These programs can provide the skills needed for entry-level positions

Accounting for Business (CTACCB)
Certificate
Program Effective Term: **Fall 2013**

This program prepares students for entry-level positions with accounting and tax services, CPA firms, and small businesses where they will provide accounting skills, computer skills, and office support. It also gives students credit that can be applied toward the Associate's Degree in Accounting.

Major/Area Requirements		(21 credits)
ACC 100 or	Accounting Practices for Business	
ACC 111	Principles of Accounting I*	3
ACC 110	Payroll Accounting	2
ACC 131	Accounting Information Systems	3
BOS 184	Spreadsheet Software Applications I	3
CIS 110	Introduction to Computer Information Systems	3
Elective	MTH 125, MTH 160, MTH 176 or MTH 181	4
TAX 101	Income Taxes for Individuals	3

Minimum Credits Required for the Program: **21**

Notes:

*Students earning an AAS degree in Accounting are required to complete ACC 111.

Program Information Report

Accounting (APACCT)
Associate in Applied Science Degree
Program Effective Term: **Fall 2013**

This program prepares students for jobs with duties assigned to a beginning accountant such as verifying additions, checking audits, postings, and vouchers, analyzing accounts, and preparing financial statements. Many of the courses transfer to four-year colleges, including programs at Eastern Michigan University, Madonna University, and Walsh College. If the primary goal is to transfer into a bachelor's of business administration program in accounting, consider the Business Transfer program.

Articulation:
Cleary University, BBA or BS degree;
Davenport University, Bachelor degree;
Kaplan University, BS degree.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/departments/curriculum/articulation.php?levelone=colleges.

Program Admission Requirements:
Students must have:
-Academic Math Level of 2 to enroll in MTH 125
-Academic Math Level of 3 to enroll in MTH 160
-Academic Math Level of 4 to enroll in MTH 176 or MTH 181

First Semester		(14 credits)
ACC 111	Principles of Accounting I	3
BOS 184	Spreadsheet Software Applications I	3
ENG 111	Composition I	4
MTH 125 or	Everyday College Math	
MTH 160 or	Basic Statistics	
MTH 176 or	College Algebra	
MTH 181	Mathematical Analysis I	4

Second Semester		(12 credits)
ACC 122	Principles of Accounting II	3
ACC 131	Accounting Information Systems	3
CIS 110	Introduction to Computer Information Systems	3
TAX 101	Income Taxes for Individuals	3

Third Semester		(15 credits)
ACC 213	Intermediate Accounting	3
BMG 111	Business Law I	3
BMG 140	Introduction to Business	3
BMG 220	Principles of Finance	3
ECO 211	Principles of Economics I	3

Fourth Semester		(13 credits)
ACC 225	Managerial Cost Accounting	3
BMG 265	Business Statistics	3
	Arts/Human. Elective(s)*	3
	Nat. Sci. (Elective(s)	4

Fifth Semester		(11 credits)
ACC 110	Payroll Accounting	2
BMG 207	Business Communication	3
COM 101	Fundamentals of Speaking	3
ECO 222	Principles of Economics II	3

Minimum Credits Required for the Program: **65**

Notes:

See the EMU Diverse World Requirement list.

University of Michigan - Ann Arbor Business School does not accept business or accounting courses from community colleges. If you wish to transfer into an accounting major at UM, please see a counselor.

Business

Choose one or more areas in the field of business as you prepare for your future.

Program Information Report

Business Sales and Marketing (CTBSLM)
Certificate
Program Effective Term: **Fall 2013**

This program prepares students for immediate employment in sales jobs that require skills in sales presentation, negotiation, customer service, display preparation, inventory analysis, and basic market research. The courses in this program may be applied toward an Associate in Applied Science degree in Management.

Program Admission Requirements:
Competency in keyboarding is necessary for success in this program. If students need to improve keyboarding skills, take BOS 101A before beginning the program.

Major/Area Requirements		(12 credits)
BMG 160	Principles of Sales	3
BMG 205	Creating the Customer Experience	3
BMG 207	Business Communication	3
BMG 155 or	Business on the Internet*	
BMG 250	Principles of Marketing	3

Minimum Credits Required for the Program: **12**

Notes:

It is advised that students planning to transfer to EMU complete BMG 155 because BMG 250 is a required course in the EMU business program.

Human Resource Management (HRM) (CTHRMG)
Certificate
Program Effective Term: Fall 2013

This program prepares students for entry-level jobs as a human resource assistant or specialist where they will be assisting in activities that range from recruiting, interviewing and hiring job candidates to evaluating jobs, negotiating contracts, and ensuring company compliance with equal opportunity regulations. This program also provides students with basic management skills that will improve their ability to manage people.

Major/Area Requirements		(17 credits)
ACC 110	Payroll Accounting	2
BMG 150	Labor-Management Relations	3
BMG 200	Relationship Skills in the Workplace	3
BMG 240	Human Resources Management	3
BMG 279	Performance Management	3
CIS 100 or	Introduction to Computer Productivity Apps	
CIS 110	Introduction to Computer Information Systems	3

Minimum Credits Required for the Program: **17**

Retail and Business Operations (CTRBUS)
Certificate
Program Effective Term: **Fall 2013**

It takes a large number of people working in customer-facing roles as well as behind-the-scenes in a retail operation to keep employees, customers and investors happy. Students who complete this certificate will be knowledgeable, capable and enthusiastic employees who can procure, display and deliver products and services to customers profitable in a retail setting. Students will gain the skills and expertise needed to manage retail projects as well as make and communicate decisions related to human resources, profits, productivity and processes when managing the operations aspect of a business unit.

Major/Area Requirements		(16 credits)
BMG 205	Creating the Customer Experience	3
BMG 206	Retail Principles and Practices	3
BMG 211	Merchandising and Inventory Management	3
BMG 273	Managing Operations	3
BMG 275	Business and Supply Chain Analytics	4

Minimum Credits Required for the Program: **16**

Program Information Report

Supply Chain Operations (CTSCO)
Certificate
Program Effective Term: **Fall 2013**

Students who complete this certificate will be knowledgeable, capable and enthusiastic employees who can effectively perform in a supply chain setting which involves coordinating suppliers, manufacturers, distributors and retailers to ensure that products and services are available to the final consumer in a timely and cost-effective fashion while maintaining the service level customers demand. Students will gain the skills and expertise to analyze and make decisions related to network design, purchasing, supplier relationships, transportation, inventory management, warehousing and material handling, as well as operational and financial performance measures.

Major/Area Requirements		(16 credits)
BMG 180	Introduction to Logistics and Supply Chain Management	3
BMG 211	Merchandising and Inventory Management	3
BMG 226	Transportation Management	3
BMG 227	Purchasing and Supply Management	3
BMG 275	Business and Supply Chain Analytics	4

Minimum Credits Required for the Program: **16**

Management (CVMNGA)
Advanced Certificate
Program Effective Term: **Fall 2013**

This advanced certificate offers students in any occupation or trade an opportunity to acquire skills to supervise an operation by learning and applying basic management principles through case studies and exercises. Upon completing this program, students will be able to use various tools to manage an operation which includes developing goals, organizing work activities, promoting desired employee performance, and monitoring productivity with a customer focus. Emphasis will be placed on developing skills that will involve both a critical and creative approach to management problem-solving activities. The advanced certificate may also be applied toward a WCC Associate in Applied Science Degree.

Articulation:
Eastern Michigan University, several BS degrees.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site:
http://www.wccnet.edu/departments/curriculum/articulation.php?levelone=colleges

Program Admission Requirements:
Successful completion of a career certificate or degree program or equivalent work experience. CIS 100 with a "C-" or better or equivalent skills.

Major/Area Requirements		(12 credits)
BMG 230	Management Skills	3
BMG 273	Managing Operations	3
BMG 279	Performance Management	3
BMG 291	Project Management	3

Minimum Credits Required for the Program: **12**

Program Information Report

Management (APMNGD)
Associate in Applied Science Degree
Program Effective Term: Fall 2013

Some employers require or prefer employees to have an associate degree as a condition for employment or for advancement. Students can earn an Associate in Applied Science Degree in Management, by completing the requirements listed below. See an advisor to develop a plan and select appropriate courses for this program.

Articulation:
Davenport University, Bachelor degree;
Eastern Michigan University, several BS degrees.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site:
http://www.wccnet.edu/departments/curriculum/articulation.php?levelone=colleges

First Semester		(12 credits)
	Speech Elective(s)	3
	Arts/Human. Elective(s)	3
	Writing Elective(s)	3-4
	Computer Lit. Elective(s)	3

Second Semester		(12 credits)
	Math Elective(s)	3-4
	Nat. Sci. Elective(s)	3-4
Elective	Occupational/Technical Course 1*	3
Elective	Occupational/Technical Course 2*	3

Third Semester		(12 credits)
Elective	Occupational/Technical Course 3*	3
Elective	Occupational/Technical Course 4*	3
Elective	Occupational/Technical Course 5*	3
Elective	Restricted ACC, BMG, CIS, and/or INP elective	3

Fourth Semester		(12 credits)
BMG 230	Management Skills	3
BMG 273	Managing Operations	3
Elective	Restricted ACC, BMG, CIS, and/or INP elective	3
	Soc. Sci. Elective(s)	3

Fifth Semester		(12 credits)
BMG 279	Performance Management	3
BMG 291	Project Management	3
Elective	Restricted ACC, BMG, CIS, and/or INP elective	3
Elective	Restricted ACC, BMG, CIS, and/or INP elective	3

Minimum Credits Required for the Program: 60

Notes:

Complete a certificate or degree in any occupational/technical area plus additional related credits to equal a minimum of 15 credit hours.

Retail Management (APRM)
Associate in Applied Science Degree
Program Effective Term: Fall 2013

This program prepares students to be knowledgeable, capable and enthusiastic employees who can handle both customer-facing and behind-the-scenes jobs in a retail setting. These retail jobs can be divided into four main areas: customer relations, store upkeep, product handling and administration. Students who complete this associates degree will have had exposure to all four of these areas, and they will gain the skills and knowledge to project a can-do, professional and results-focused attitude.

Students will take restricted electives toward completing a certificate as part of the program requirement in one of the following areas (9-16 credits): Accounting for Business Certificate, Human Resource Management (HRM) Certificate, Business Sales and Marketing Certificate, Entrepreneurship and Innovation Certificate, Management Advanced Certificate or a Certificate or Degree in any occupational/technical area

First Semester		(15 credits)
BMG 205	Creating the Customer Experience	3
BMG 206	Retail Principles and Practices	3
	Computer Lit. Elective(s)	3
	Writing Elective(s)	3-4
	Restricted Elective(s) 1: Select a course toward completion of a certificate.	3

Second Semester		(16 credits)
BMG 211	Merchandising and Inventory Management	3
	Arts/Human. Elective(s)	3
MTH 125 or	Everyday College Math	
MTH 160 or	Basic Statistics	
	Math Elective(s) Any math level 4 or higher course	4
	Speech Elective(s)	3
	Restricted Elective(s) 2: Select a course toward completion of a certificate.	3

Third Semester		(15 credits)
BMG 230	Management Skills	3
	Nat. Sci. Elective(s)*	3
	Soc. Sci. Elective(s)	3
	Restricted Elective(s) 3: Select a course toward completion of a certificate.	3
	Restricted Elective(s) 4: Select a course toward completion of a certificate.	3

Fourth Semester		(15 credits)
BMG 273	Managing Operations	3
BMG 275	Business and Supply Chain Analytics	4
BMG 295	Supply Chain Field Studies	2
	Elective(s) to reach a minimum of 60 credits.	6

Minimum Credits Required for the Program: **61**

Notes:

Students who plan to transfer should elect a lab-based Natural Science course. They should also meet with an advisor to ensure MACRAO requirements are met.

Supply Chain Management (APSCM)
Associate in Applied Science Degree
Program Effective Term: **Fall 2013**

High Demand Occupation   High Skill Occupation   High Wage Occupation

Program is also available online

This program prepares students to be knowledgeable, capable and enthusiastic employees who can effectively perform in a supply chain environment. Students will learn the principles and practices of managing, marketing, selling, promoting and distributing retail goods and services. They will also learn how to align supply chain strategies with corporate goals to coordinate suppliers, manufacturers, distributors and retailers, ensuring products and services are available to the final consumer in a timely and cost-effective manner while meeting customer service demands. Finally, students will learn how to employ various analytical techniques used in managerial decision-making when designing a supply chain network, managing and improving that network and resolving supply chain-related issues.

First Semester		(16 credits)
BMG 180	Introduction to Logistics and Supply Chain Management	3
BMG 205	Creating the Customer Experience	3
BMG 206	Retail Principles and Practices	3
	Computer Lit. Elective(s)	3
	Writing Elective(s)	4

Second Semester		(16 credits)
BMG 211	Merchandising and Inventory Management	3
BMG 226	Transportation Management	3
	Arts/Human. Elective(s)	3
MTH 125 or	Everyday College Math	
MTH 160 or	Basic Statistics	
	Math Elective(s) Any math level 4 or higher course	4
	Speech Elective(s)	3

Third Semester		(17 credits)
BMG 227	Purchasing and Supply Management	3
BMG 230	Management Skills	3
BMG 273	Managing Operations	3
BMG 275	Business and Supply Chain Analytics	4
	Nat. Sci. Elective(s)*	4

Fourth Semester		(11 credits)
BMG 295	Supply Chain Field Studies	2
	Soc. Sci. Elective(s)	3
	Electives to reach a minimum of 60 credits	6

Minimum Credits Required for the Program: **60**

Notes:

*Select a lab-based course. Students who plan to transfer should meet with an advisor to ensure MACRAO requirements are met.

Business (AABAS)
Associate in Arts Degree
Program Effective Term: Fall 2013

This program prepares students for transfer to a bachelor's of business administration degree program at a four-year college or university, where they will further improve their communication and interpersonal skills while developing a specialty in accounting, economics, finance, management, or some other aspect of business. The program was specifically designed to transfer to Eastern Michigan University. Check with an advisor for information on transferring to other colleges. See the footnotes for transferring to the University of Michigan.

Articulation:
Cleary University, BS or BBA degree;
Davenport University, Bachelor degree;
Eastern Michigan University, BBA degree*;
Ferris State University, BS degree;
Kaplan University, BS degree;
Madonna University, BS degree;
Northwood University, BBA degree;
University of Michigan-Flint, BA degree;
Walsh College, BA or BBA degree.

*A minimum cumulative GPA of 2.5 is required for admission to EMU's College of Business. All courses must be completed with a minimum grade of "C" (2.0) to transfer. Contact the College of Business Undergraduate Advising Office at EMU early to have transfer credits reviewed and unofficially evaluated. (734-487-2344 or email cob_undergraduate@emich.edu)

This program meets MACRAO. Students must have their transcripts certified for MACRAO completion by the WCC Student Records Office.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/departments/curriculum/articulation.php?levelone=colleges.

Program Admission Requirements:
Students must have:
- Academic Math Level of 2 to enroll in MTH 125
- Academic Math Level of 3 to enroll in MTH 160
- Academic Math Level of 4 to enroll in MTH 176 or MTH 181

First Semester		(17 credits)
ACC 111	Principles of Accounting I	3
BMG 140	Introduction to Business	3
CIS 110	Introduction to Computer Information Systems	3
ENG 111	Composition I	4
MTH 125 or	Everyday College Math	
MTH 160 or	Basic Statistics	
MTH 176 or	College Algebra	
MTH 181	Mathematical Analysis I	4

Second Semester		(16 credits)
ACC 122	Principles of Accounting II	3
BMG 207	Business Communication	3
ENG 226	Composition II	3
	Nat. Sci. Elective(s)**	4
	Soc. Sci. Elective(s)	3

Third Semester		(15 credits)
BMG 111	Business Law I	3
BMG 265	Business Statistics	3
COM 101	Fundamentals of Speaking	3
ECO 211	Principles of Economics I	3
	Soc. Sci. Elective(s)	3

Program Information Report

Fourth Semester		(12 credits)
ECO 222	Principles of Economics II	3
	Elective Complete one course as a free elective to bring the program total to a minimum of 60 credits.****	3
	Arts/Human. 1 Elective(s)***	3
	Arts/Human. 2 Elective(s)***	3

Minimum Credits Required for the Program: **60**

Notes:

*Students transferring to a four-year institution should choose a lab-based, MACRAO-approved science course.
**See the MACRAO list to make course selections from any discipline except ECO.
***See the EMU Diverse World Requirement list. A course in logic or ethics (PHL 205 or PHL 250) is strongly recommended.
 ****See an advisor to choose courses that transfer to and meet the requirements of the program and college to which you are transferring.

University of Michigan School of Business does not accept business or accounting courses from community colleges. If you wish to transfer to a business major at UM, please see a counselor.

Business Office Systems

Whether you are just starting out in an office or advancing to a high-level administrative or executive assistant position, these programs can help you achieve your goals.

Administrative Assistant I (CTADA)
Certificate
Program Effective Term: Fall 2013

This program prepares students for immediate employment in entry-level information processing, receptionist, and general office positions. Students will obtain skills in document formatting, electronic organization and collaboration, record management, and Internet communication and scheduling. It also gives students credits that can be used toward an associate degree in Business Office Administration.

Major/Area Requirements		(18 credits)
BMG 155	Business on the Internet	3
BMG 207	Business Communication	3
BOS 101C	Advanced Keyboarding	1
BOS 157	Word Processing and Document Formatting I	3
BOS 184	Spreadsheet Software Applications I	3
BOS 206	Personal Management Application and Internet Resources	2
BOS 257	Word Processing and Document Formatting II	3

Minimum Credits Required for the Program: **18**

Computer Software Applications (CTCSSC)
Certificate
Program Effective Term: Fall 2013

This program provides computer skills training in seven office software applications, using the Microsoft Office Suite as well as a Web browser. These courses are primarily intended for students preparing for careers in the administrative office support area. The courses also give students skills that can be applied toward careers in computer application support and records management. It is recommended that students completing the software applications program be able to key at least 40 words per minute.

Articulation:
Eastern Michigan University, BS degree.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet. edu/departments/curriculum/articulation.php?levelone=colleges.

Major/Area Requirements		(19 credits)
BOS 106	Electronic Planning, Sharing and Organization	3
BOS 157	Word Processing and Document Formatting I	3
BOS 182	Database Software Applications	3
BOS 184	Spreadsheet Software Applications I	3
BOS 206	Personal Management Application and Internet Resources	2
BOS 207	Presentation Software Applications	2
BOS 208	Desktop Publishing for the Office	3

Minimum Credits Required for the Program: **19**

Medical Billing and Coding (CTMBC)
Certificate
Program Effective Term: **Fall 2013**

In this program students will develop comprehensive skills in classifying, coding, reporting, analyzing and managing medical data for both physician's office and large healthcare facility settings. Students will also learn how to code and process claims for reimbursement for multiple healthcare environments, and learn about pertinent laws, regulations, and compliance issues affecting healthcare information management and privacy. Upon completion of this program, students may be eligible to take the AHIMA CCA, CCS and CCS-P coding exams. This program is not an AAMA certification preparation program.

Continuing Eligibility Requirements:
All courses must be completed with a GPA of 2.0 or better.

First Semester		(10 credits)
BIO 109 or	Essentials of Human Anatomy and Physiology	
BIO 111	Anatomy and Physiology - Normal Structure and Function	4
BOS 223	Medical Office Procedures	3
HIT 101	Healthcare Terminology for the Health Information Technology Professional	3

Second Semester		(12 credits)
BOS 224	Medical Office Insurance and Billing	4
CMC 121	Human Disease and Pharmacology	2
HIT 205	Introductory ICD Coding	3
HIT 215	Introductory Procedural Coding	3

Third Semester		(9 credits)
BOS 185	Medical Computer Skills and Electronic Health Records	3
HIT 210	Intermediate/Advanced ICD Coding	3
HIT 220	Intermediate/Advanced Procedural Coding	3

Fourth Semester		(3 credits)
HIT 250	Medical Coding Practicum	3

Minimum Credits Required for the Program: **34**

Medical Office Administration (CTMOA)
Certificate
Program Effective Term: **Fall 2013**

This program prepares the student for entry-level administrative work in medical offices and healthcare facilities. The coursework introduces students to the duties of the medical receptionist, as well as the basics of health insurance and medical billing. Students will learn how to answer patient and professional inquiries, decipher health insurance benefits, use medical software for scheduling and charting, as well as how to communicate with patients and medical staff. This program is not an AAMA certification preparation program.

Continuing Eligibility Requirements:
All courses must be completed with a GPA of 2.0 or better.

First Semester		(12 credits)
BOS 101C	Advanced Keyboarding	1
BOS 157	Word Processing and Document Formatting I	3
BOS 175	Medical Office Communication	2
BOS 223	Medical Office Procedures	3
HIT 101	Healthcare Terminology for the Health Information Technology Professional	3

Second Semester		(10 credits)
BOS 185	Medical Computer Skills and Electronic Health Records	3
BOS 224	Medical Office Insurance and Billing	4
HSC 115	Clinical and Lab Procedures for Office Assistants	3

Minimum Credits Required for the Program: **22**

Administrative Assistant II (CVAAST)
Advanced Certificate
Program Effective Term: Fall 2013

This program provides comprehensive preparation for individuals who are currently employed as office assistants and who wish to advance their careers in office administration by upgrading their skills. Providing the knowledge and skills necessary for employment as a high-level administrative assistant or executive assistant in the public or private sector, this advanced certificate builds on skills developed in the Administrative Assistant I certificate program. In the Administrative Assistant II program, emphasis is placed on the expanding duties of an administrative assistant, and on the necessity of acquiring an in-depth knowledge of integrated software applications for the office. While mastering the technical knowledge essential for the office professional, students will also learn office management and organizational principles. Additionally, the program provides opportunities for skill enhancement in information processing, basic financial management, electronic presentations, and office administration. Upon completion of this program, the student will receive an advanced certificate as an administrative assistant.

Program Admission Requirements:
Completion of the Administrative Assistant I Certificate. Exceptions may be allowed upon consultation with a program advisor and evidence of relevant prior professional and/or academic experience.

Major/Area Requirements		(18 credits)
BOS 182	Database Software Applications	3
BOS 207	Presentation Software Applications	2
BOS 208	Desktop Publishing for the Office	3
BOS 230	Electronic Forms Design	3
BOS 250	Office Administration	4
BOS 284	Spreadsheet Software Applications II	3

Minimum Credits Required for the Program: **18**

Business Office Administration (APBOAD)
Associate in Applied Science Degree
Program Effective Term: Fall 2013

This program prepares students for higher-level support positions in office settings where increased responsibilities require technical skills in desktop publishing, presentation software, accounting, and database software. Students will also gain broader skills through completion of the general education courses required for an associate's degree.

Note: This program is not an AAMA Certification preparation program.

Articulation:
Eastern Michigan University, BS degree (only applies to the Law Office Administration concentration).

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: www.wccnet.edu/departments/curriculum/articulation.php?levelone=colleges

Minimum Concentration Credits Required for the Program: **63**

Complete one of the following concentrations: Administrative Assistant, Medical Administrative Assistant, Law Office Administration or Office Management.

The Law Office Administration (LAWA) concentration should not be regarded as a paralegal certification program and is intended solely for those students considering transferring into the undergraduate Bachelor of Science in Paralegal Studies at Eastern Michigan University. Interested students should consult the EMU-WCC articulation guide for information on course and program transferability.

Business Office Administration Concentrations

Administrative Assistant (ADMA)	(65 credits)

First Semester	(14 credits)
BOS 101C	Advanced Keyboarding	1
BOS 106	Electronic Planning, Sharing and Organization	3
BOS 206	Personal Management Application and Internet Resources	2
	Writing Elective(s)*	4
	Math Elective(s)	4

Second Semester	(12 credits)
ACC 100 or	Accounting Practices for Business	
ACC 111	Principles of Accounting I	3
BOS 157	Word Processing and Document Formatting I	3
BOS 184	Spreadsheet Software Applications I	3
	Arts/Human. Elective(s)	3

Third Semester	(14 credits)
BMG 155	Business on the Internet	3
BOS 207	Presentation Software Applications	2
BOS 257	Word Processing and Document Formatting II	3
BOS 284	Spreadsheet Software Applications II	3
	Speech Elective(s)**	3

Fourth Semester	(12 credits)
BMG 207	Business Communication	3
BOS 182	Database Software Applications	3
BOS 208	Desktop Publishing for the Office	3
	Nat. Sci. Elective(s)	3

Fifth Semester	(13 credits)
ACC 131	Accounting Information Systems	3
BOS 230	Electronic Forms Design	3
BOS 250	Office Administration	4
	Soc. Sci. Elective(s)	3

Minimum Credits Required for the Concentration or Option: 65

Law Office Administration (LAWA)　　　　　　　　　　　(65 credits)

First Semester　　　　　　　　　　　　　　　　　　　(14 credits)
BOS 101C	Advanced Keyboarding	1
BOS 106	Electronic Planning, Sharing and Organization	3
BOS 206	Personal Management Application and Internet Resources	2
	Math Elective(s)	4
	Writing Elective(s)*	4

Second Semester　　　　　　　　　　　　　　　　　　(12 credits)
ACC 111	Principles of Accounting I	3
BOS 157	Word Processing and Document Formatting I	3
BOS 184	Spreadsheet Software Applications I	3
	Arts/Human. Elective(s)	3

Third Semester　　　　　　　　　　　　　　　　　　(14 credits)
BOS 207	Presentation Software Applications	2
BOS 211	Introduction to Paralegal Studies	3
BOS 257	Word Processing and Document Formatting II	3
BOS 284	Spreadsheet Software Applications II	3
	Speech Elective(s)**	3

Fourth Semester　　　　　　　　　　　　　　　　　(12 credits)
BMG 111	Business Law I	3
BMG 155	Business on the Internet	3
BOS 182	Database Software Applications	3
	Nat. Sci. Elective(s)	3

Fifth Semester　　　　　　　　　　　　　　　　　　(13 credits)
BMG 207	Business Communication	3
BOS 250	Office Administration	4
CJT 154	Everyday Law: Law and Civil Liberties	3
	Soc. Sci. Elective(s)	3

Minimum Credits Required for the Concentration or Option:　65

Medical Administrative Assistant (MEDA)　　　　　　　(63 credits)

First Semester　　　　　　　　　　　　　　　　　　(14 credits)
BOS 101C	Advanced Keyboarding	1
BOS 106	Electronic Planning, Sharing and Organization	3
BOS 206	Personal Management Application and Internet Resources	2
	Math Elective(s)	4
	Writing Elective(s)*	4

Second Semester　　　　　　　　　　　　　　　　　　(12 credits)
BOS 157	Word Processing and Document Formatting I	3
BOS 184	Spreadsheet Software Applications I	3
HIT 101	Healthcare Terminology for the Health Information Technology Professional	3
	Arts/Human. Elective(s)	3

Third Semester　　　　　　　　　　　　　　　　　　(14 credits)
BOS 185	Medical Computer Skills and Electronic Health Records	3
BOS 207	Presentation Software Applications	2
BOS 223	Medical Office Procedures	3
BOS 257	Word Processing and Document Formatting II	3
	Speech Elective(s)**	3

Fourth Semester　　　　　　　　　　　　　　　　　(13 credits)
BIO 102 or	Human Biology	
BIO 109	Essentials of Human Anatomy and Physiology	4
BMG 155	Business on the Internet	3
BMG 207 or	Business Communication	
BOS 175	Medical Office Communication	2-3
BOS 224	Medical Office Insurance and Billing	4

Program Information Report

Fifth Semester		**(10 credits)**
BOS 182	Database Software Applications	3
HSC 115	Clinical and Lab Procedures for Office Assistants	3
HSC 131	CPR/AED for the Professional Rescuer and First Aid	1
	Soc. Sci. Elective(s)	3

Minimum Credits Required for the Concentration or Option: **63**

Office Management (OFMG)		**(66 credits)**

First Semester		**(14 credits)**
BOS 101C	Advanced Keyboarding	1
BOS 106	Electronic Planning, Sharing and Organization	3
BOS 206	Personal Management Application and Internet Resources	2
	Math Elective(s)	4
	Writing Elective(s)*	4

Second Semester		**(14 credits)**
ACC 100	Accounting Practices for Business	3
BOS 157	Word Processing and Document Formatting I	3
BOS 184	Spreadsheet Software Applications I	3
CIS 117	Windows Operating System	2
	Arts/Human. Elective(s)	3

Third Semester		**(13 credits)**
ACC 110	Payroll Accounting	2
BMG 155	Business on the Internet	3
BOS 207	Presentation Software Applications	2
BOS 257	Word Processing and Document Formatting II	3
	Speech Elective(s)**	3

Fourth Semester		**(12 credits)**
BMG 200	Relationship Skills in the Workplace	3
BMG 207	Business Communication	3
BOS 182	Database Software Applications	3
	Nat. Sci. Elective(s)	3

Fifth Semester		**(13 credits)**
BMG 240	Human Resources Management	3
BMG 279	Performance Management	3
BOS 250	Office Administration	4
	Soc. Sci. Elective(s)	3

Minimum Credits Required for the Concentration or Option: **66**

Minimum Credits Required for the Program: **63**

Notes:

*ENG 111 is recommended.
**COM 101 is recommended.

Entrepreneurship

Learn how to recognize market opportunities and plan a small business through completion of this certificate program.

Program Information Report

Entrepreneurship and Innovation (CTENTI)
Certificate
Program Effective Term: Fall 2013

This certificate provides students with the ability to continuously learn and adapt the business knowledge, skills and attitudes needed to succeed in business, whether as an entrepreneur starting and operating a small business or as an intrapreneur within an organization. Students learn to recognize market opportunities within an industry, plan a business initiative to develop their big idea, and evaluate its profit potential. This certificate is appropriate for students who wish to be self-employed.

Major/Area Requirements		(18 credits)
BMG 101	Entrepreneurship I: Finding Your Opportunity	3
BMG 109	Entrepreneurship II: Starting Your Business	3
BMG 209	Entrepreneurship III - Running and Growing Your Business	3
Elective	Select 9 credits from any WCC certificate program.	9

Minimum Credits Required for the Program: **18**

School of Child Care Professionals

If you yearn to be involved in nurturing the next generation of young people, the School of Child Care Professionals is the place to begin. Gain the knowledge and skills required for state licensing and national childcare credentials while enjoying the personal experience of working directly with children.

Washtenaw Community College offers programs at several levels for students who want to begin new careers, or advance in their existing careers. The first level is the certificate, which can vary from nine to thirty-six credits, depending on the field. Certificates generally prepare students for entry-level jobs.

After completing a certificate, students can progress to the next level, the advanced certificate. The credit hours required for these programs also vary. This type of certificate provides a more specialized level of skill development, and often allows students to upgrade their positions at their places of employment.

The next level, an Associate in Applied Science, is available for some programs. For some career fields, it is possible to earn a certificate, advanced certificate, and an Associate in Applied Science degree in the same field. In these cases, the credit hours from the certificate and advanced certificate can be applied to the credit hours needed for the Associate in Applied Science degree.

Child Care Professionals

Whether you are looking to care for children in a home-based center or a professional or school-based setting, these programs can prepare you for an entry-level position as a childcare professional.

Child Development (CTCDA)
Certificate
Program Effective Term: Fall 2013

This Child Development Certificate is the first level in a three-tier training program. This program prepares students for the assessment exam required for the Child Development Associate (CDA) credential. It also prepares students for employment in child care centers or in family home daycare settings working with infants and toddlers, or preschoolers. Skills from the 13 functional areas required by the National Council for Early Childhood Professional Recognition are emphasized.

Program Admission Requirements:
Students must be at least 18 years of age and have a high school diploma or equivalent.

Major/Area Requirements		(11 credits)
CCP 122	Essentials of Early Care and Education - I	4
CCP 123	Essentials of Early Care and Education - II	4
CCP 132	Child Development Practicum I	1
CCP 133	Child Development Practicum II	1
HSC 131	CPR/AED for the Professional Rescuer and First Aid	1
	Optional (not required): CCP 124	

Minimum Credits Required for the Program: **11**

Notes:

*These additional courses are not required for the WCC Certificate, but may be taken to prepare for the final assessment test administered by the National Council and to complete the final observation assessment for the Child Development Associate credential.

Child Care and Education (CVCCE)
Advanced Certificate
Program Effective Term: Fall 2013

This certificate provides advanced training for child care professionals, and for paraprofessionals in school settings. It is the second level of a three-tier training program for adults who work with children under age 12. It is intended for students who are employed in a program that serves children under age 12 in a group setting.

Program Admission Requirements:
Students must have one of the following to enter this program: completion of a two-year vocational child care certificate; a CDA certificate; 12 credits in child care or elementary education; or concurrent enrollment in the Child Development Certificate program (CTCDA). Completion of the CTCDA is required before completing the Child Care and Education Advanced Certificate.

Students in the program are assumed to be employed in a program that serves children under age 12 in a group setting.

Major/Area Requirements		(25 credits)
CCP 101	Child Development	3
CCP 113	Health, Safety and Nutrition for Child Care	3
CCP 160	Foundations of Child Care and Early Education	3
CCP 209	Curriculum for Young Children	3
CCP 210	Child Guidance and Classroom Management	3
CIS 100	Introduction to Computer Productivity Apps	3
COM 101	Fundamentals of Speaking	3
ENG 111	Composition I	4

Minimum Credits Required for the Program: **25**

Child Care Professional (APCCP)
Associate in Applied Science Degree
Program Effective Term: Fall 2013

Completion of the Child Care Professional Associate in Applied Science degree qualifies students to be a director or lead teacher at a child care center in the State of Michigan. The program is the last level in a three-tier training program for adults who work with children under twelve in group settings.

Articulation:
Ferris State University, BS degree;
Madonna University, BS degree;
Siena Heights, BA degree;
University of Michigan-Dearborn, BGS degree.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site:
http://www.wccnet.edu/departments/curriculum/articulation.php?levelone=colleges.

Program Admission Requirements:
Academic Reading and Writing Levels of 6 are required in the courses of this program.

Continuing Eligibility Requirements:
Students who wish to enroll in child care practicum courses: CCP 132 or CCP 133 must be employed a minimum of 8 hours for 15 weeks for each credit of practicum. Permission is required to enroll in any CCP practicum course. Permission can be granted only after the student has submitted a Work Place Learning Agreement, Student Agreement and an Employer Agreement.

First Semester		(13 credits)
CCP 122	Essentials of Early Care and Education - I	4
CCP 132	Child Development Practicum I	1
CIS 100	Introduction to Computer Productivity Apps	3
ENG 111	Composition I	4
HSC 131	CPR/AED for the Professional Rescuer and First Aid	1

Second Semester		(14 credits)
CCP 101	Child Development*	3
CCP 123	Essentials of Early Care and Education - II	4
CCP 133	Child Development Practicum II	1
COM 101	Fundamentals of Speaking	3
	Soc. Sci. Elective(s)**	3

Third Semester		(13 credits)
CCP 113	Health, Safety and Nutrition for Child Care	3
CCP 210	Child Guidance and Classroom Management	3
CCP 251	Education of Exceptional Children	3
MTH 125 or	Everyday College Math	
MTH 148	Functional Math for Elementary Teachers I	4

Fourth Semester		(12 credits)
CCP 160	Foundations of Child Care and Early Education	3
CCP 200	Working with Families in a Diverse Society	3
CCP 209	Curriculum for Young Children	3
	Nat. Sci. Elective(s)***	3-4

Fifth Semester		(8 credits)
CCP 218	Advanced Child Care Seminar	1
CCP 219	Advanced Child Care Practicum	2
ENG 240 or	Children's Literature	
ENG 242	Multicultural Literature for Youth****	3
	Any 100-level or above course (suggested courses include CCP 211 or CCP 220)	2

Minimum Credits Required for the Program: **60**

Notes:

Program Information Report

*CCP 101 must be taken before or concurrently with any other CCP course.
**Students are encouraged to select PSY 100 or SOC 100 for their social science elective.
***The following courses are recommended for the Natural Science Elective: AST 111, BIO 101, GLG 100, GLG 104, or SCI 101
****Transfer students should consider a course from the EMU Diverse World Requirement List

School of Construction Technology

Become part of the global community of skilled trades' professionals or skilled trades' managers. Design, plan, construct and complete structures for your home or for your career. You can earn a certificate or degree in Construction, Construction Management, Sustainable Building Practices or Heating, Ventilation and Air Conditioning. These programs offer the perfect blend of classroom education and hands-on training. At the Henry S. Landau Skilled Trades Center, you will be taught construction skills from the ground up. You can learn classic skills such as woodworking or modern techniques needed to maintain or improve your own structure. The HVAC program offers a wide range of training to equip high-end technicians with the knowledge and skills needed for successful entry into the field.

Washtenaw Community College offers programs at several levels for students who want to begin new careers, or advance in their existing careers. The first level is the certificate, which can vary from nine to thirty-six credits, depending on the field. Certificates generally prepare students for entry-level jobs.

After completing a certificate, students can progress to the next level, the advanced certificate. The credit hours required for these programs also vary. This type of certificate provides a more specialized level of skill development, and often allows students to upgrade their positions at their places of employment.

The next level, an Associate in Applied Science, is available for some programs. For some career fields, it is possible to earn a certificate, an advanced certificate, and an Associate in Applied Science degree in the same field. In these cases, the credit hours from the certificate and advanced certificate can be applied to the credit hours needed for the Associate in Applied Science degree.

Alternatively, students can earn an AAS in Occupational Studies by completing a certificate, an advanced certificate (if one exists) and General Education requirements.

Construction

If you want to learn basic construction, prepare to take the Michigan Builder's License exam or are considering starting a construction business, this is the place to start.

Program Information Report

Construction Technology I (CTCON1)
Certificate
Program Effective Term: **Fall 2013**

This program prepares students for entry-level jobs in a broad range of careers in the construction industry, where they need an understanding of building systems, the safe use of tools and equipment, materials, and the vocabulary of the field.

Articulation:
Eastern Michigan University, several BS degrees.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/departments/curriculum/articulation.php?levelone=colleges

Major/Area Requirements		(17 credits)
CON 104	Construction Framing I	3
CON 105	Construction Framing II	3
CON 108	Introduction to Construction Technology	2
CON 204	Construction Finishes - Interior	3
CON 205	Construction Finishes - Exterior	3
CON 255	Construction Concrete and Masonry	3

Minimum Credits Required for the Program: **17**

Sustainable Building Practices (CTSBP)
Certificate
Program Effective Term: **Fall 2013**

In this program, students will be introduced to the theory of building sustainability. Through review of the history of the green movement, students will develop an understanding of why it has become a critical part of our way of life. Following an overview of the impact of non-sustainable practices on the planet, students will be introduced to both clean energy practices and the Building Performance Institute's requirement for procedures used in building weatherization. Students will apply theory and skills to projects in the lab and off-site environments.

Program Admission Requirements:
Students must have an Academic Math Level of 3.

Major/Area Requirements		(18 credits)
CON 180	Introduction to Green Building	3
CON 247	Sustainable Building Practices	4
ELE 106	Renewable Energy Technology	3
ENV 101	Environmental Science I	4
HVA 201	Energy Audits*	4

Minimum Credits Required for the Program: **18**

Notes:

*Students in this program will be given prerequisite overrides for HVA 201.

Cabinetmaking/Millwork Technology (CVCMT)
Advanced Certificate
Program Effective Term: **Fall 2013**

This program is designed to develop skills and knowledge needed for positions such as trim carpenters, cabinetmakers, furniture makers and repair technicians. Students will develop skills related to the design, fabrication, and installation of interior cabinetry and trim systems for commercial and residential applications.

Articulation:
Eastern Michigan University, BS degree.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet. edu/departments/curriculum/articulation.php?levelone=colleges.

Program Admission Requirements:
Students must complete the Construction Technology I Certificate for entry into this program.

Major/Area Requirements		(17 credits)
CON 108	Introduction to Construction Technology	2
CON 170	Cabinetry and Millwork I	3
CON 173	Cabinetry and Millwork II	3
CON 175	Cabinetry and Millwork III	3
CON 250	Cabinet Shop Management and Fundamentals	3
CON 275	Cabinetry and Millwork IV	3

Minimum Credits Required for the Program: **17**

Construction Technology II (CVCON2)
Advanced Certificate

Program Effective Term: **Fall 2013**

This advanced certificate prepares students for specific careers in construction. The program will prepare students to take the State of Michigan Builder's License exam, create contracts for construction projects, and gain necessary techniques for specific contractors. Students preparing for the State of Michigan builder's license exam will also need CMG 130.

Articulation:
Eastern Michigan University, several BS degrees.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site:
http://www.wccnet.edu/departments/curriculum/articulation.php?levelone=colleges

Program Admission Requirements:
Completion of the Construction Technology I Certificate or two years experience in the construction industry is required for entry into this program.

Major/Area Requirements		(18 credits)
CON 220	Construction Licensing, Contracts, and Start Up	3
CON 230	Construction Production	3
CON 235	Construction - Building Codes and Prints	3
CON 240	Construction - Advanced Finishes and Techniques	3
CON 260	Construction Remodeling	3
CON 270	Construction Mechanicals	3

Minimum Credits Required for the Program: **18**

Program Information Report

Construction Technology (ASCT)
Associate in Science Degree
Program Effective Term: Fall 2013

The Residential Construction program teaches students how to build a home from the ground up. The program offers a balance of classroom theory and hands on training. Students will also learn how to start up their own construction business.

Articulation:
Eastern Michigan University, several BS degrees.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/departments/curriculum/articulation.php?levelone=colleges

First Semester		(15 credits)
CON 104	Construction Framing I	3
CON 108	Introduction to Construction Technology	2
ENG 111	Composition I	4
MTH 178	General Trigonometry	3
	Arts/Human. Elective(s)*	3

Second Semester		(15 credits)
CMG 130	Construction Site Safety and OSHA Regulations	3
CON 105	Construction Framing II	3
ENG 226	Composition II	3
PLS 112	Introduction to American Government	3
	Computer Lit. Elective(s)	3

Third Semester		(16 credits)
CON 204	Construction Finishes - Interior	3
CON 205	Construction Finishes - Exterior	3
PHY 105	Conceptual Physics	4
	Arts/Human. Elective(s)*	3
	Speech Elective(s)	3

Fourth Semester		(15 credits)
CON 220	Construction Licensing, Contracts, and Start Up	3
CON 230	Construction Production	3
CON 255	Construction Concrete and Masonry	3
	Arts/Human. Elective(s)*	3
	Soc. Sci. Elective(s)	3

Minimum Credits Required for the Program: **61**

Notes:

SPN 111 is strongly recommended as one of the Arts/Humanities electives.

Construction Management
Prepare for work in the construction management or property maintenance industries through the completion of these programs.

Commercial Building Facility Maintenance (CTCBFM)
Certificate
Program Effective Term: **Fall 2013**

The Advanced Certificate for Commercial Building Facilities Maintenance offers advanced training for maintenance mechanics to expand their knowledge of daily and preventative maintenances of commercial buildings. This program is currently limited to University of Michigan Maintenance Mechanics.

Program Admission Requirements:
Limited to U of M Maintenance Mechanics

Continuing Eligibility Requirements:
Students must maintain a "C" or better

Major/Area Requirements		(12 credits)
CON 141	Commercial Building Maintenance I	3
CON 145	Commercial Building Maintenance II	3
CON 147	Commercial Building Maintenance III	3
CON 149	Commercial Building Maintenance IV	3

Minimum Credits Required for the Program: **12**

Construction Management (AACMG)
Associate in Arts Degree
Program Effective Term: **Fall 2013**

This program prepares students for entry-level jobs in the construction industry as well as for transfer to a bachelor's degree program in construction management at a four-year college or university. Students who transfer will continue developing the skills needed to work for construction contractors, engineering/architectural firms, public agencies, or trade associations in positions such as office engineer, field engineer, safety engineer, project engineer, foreman, estimator, scheduler, expeditor, quality control engineer, inspector, material representative or independent contractor. The program transfers to Eastern Michigan University. In addition to the required courses within the degree program, students may transfer additional courses taken at WCC that will be applied to technical, business and math/science requirements for the bachelor's degree program at Eastern Michigan University.

Articulation:
Eastern Michigan University, several BS degrees.

This program meets MACRAO. Students must have their transcripts certified for MACRAO completion by the WCC Student Records Office.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/departments/curriculum/articulation.php?levelone=colleges.

Program Admission Requirements:
Students must have an Academic Math Level of 4 to enroll in CMG 150. Two years of high school algebra is recommended.

First Semester		(14 credits)
CIS 100	Introduction to Computer Productivity Apps	3
CMG 150	Introduction to Construction Management	3
ENG 111	Composition I	4
MTH 160	Basic Statistics*	4

Second Semester		(15 credits)
ACC 111	Principles of Accounting I	3
CMG 130	Construction Site Safety and OSHA Regulations	3
ENG 226	Composition II	3
MTH 178	General Trigonometry	3
	Arts/Human. 1 Elective(s)	3

Third Semester		(15 credits)
BMG 240	Human Resources Management	3
CMG 180	Application of Construction Materials	3
ECO 211	Principles of Economics I**	3
	Soc. Sci. 1 Elective(s)**	3
	Speech Elective(s)***	3

Fourth Semester		(16 credits)
BMG 207	Business Communication	3
CMG 170	Construction Graphics	3
GLG 114	Physical Geology	4
	Soc. Sci. 2 Elective(s)**	3
	Arts/Human. 2 Elective(s)	3

Fifth Semester		(6 credits)
BMG 111	Business Law I	3
CMG 200	Construction Systems	3

Minimum Credits Required for the Program: **66**

Notes:

*MTH 160 should be completed at WCC to satisfy EMU's Quantitative Reasoning Requirement. If completed at EMU, MATH 110 will be required unless waived by ACT/SAT or math placement score.
**ECO 211 meets the social science requirement. Students may select one additional course in ECO and a second course in another discipline to meet the MACRAO social science requirement.

***Choose any COM course that meets General Education Requirements.

Students transferring to EMU should see the articulation agreement for additional courses that can be taken at WCC.

HVAC

Whether you are working on residential or commercial equipment these programs prepare you for a career in the Heating, Ventilation, Air Conditioning and Refrigeration Industry.

Heating, Ventilation, Air Conditioning, and Refrigeration - Residential (CTHVRR)
Certificate
Program Effective Term: Fall 2013

This program prepares students for entry-level jobs in HVAC contracting companies, HVAC servicing companies, hospitals, schools and other public institutions, and apprenticeships in large manufacturing plants and supply houses. In these commercial, residential, or institutional settings students combine their diagnostic and repair skills with customer relations skills to service heating, ventilation, and air conditioning equipment. This program also helps prepare students for the third class refrigeration licensure examination.

Articulation:
Eastern Michigan University, several BS degrees.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/departments/curriculum/articulation.php?levelone=colleges.

Required Courses		(25 credits)
HVA 101	Heating, Ventilation and Air Conditioning I	4
HVA 102	HVAC Sheet Metal Fabrication	4
HVA 103	Heating, Ventilation, and Air Conditioning II	4
HVA 105	Residential and Light Commercial Heating Systems	4
HVA 107	Residential and Light Commercial Air Conditioning Systems	4
HVA 108	Residential HVAC Competency Exams and Codes	3
WAF 104	Soldering and Brazing	2

Minimum Credits Required for the Program: **25**

Heating, Ventilation, Air Conditioning and Refrigeration - Commercial Trade (CVHVCT)
Advanced Certificate
Program Effective Term: **Fall 2013**

This program is a capstone to HVAC-Residential Certification, and is designed for students who wish to develop skills in HVACR mechanics or installation. It prepares the student for industry-recognized certification (C/IS) for entry-level employment in commercial heating, ventilation and air conditioning. Additional theory and hands-on experience will increase students' knowledge base concerning HVACR systems at the commercial level. The student will develop knowledge and skills in sizing, layout, installation, maintenance, and troubleshooting HVACR equipment.

Articulation:
Eastern Michigan University, several BS degrees.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site:
http://www.wccnet.edu/departments/curriculum/articulation.php?levelone=colleges

Program Admission Requirements:
Students must complete the Heating, Ventilation, Air Conditioning, and Refrigeration Residential Certificate (CTHVRR).

Core Courses		(7 credits)
HVA 201	Energy Audits	4
HVA 202	Air System Layout and Design	3

Major/Area Requirements		(10 credits)
HVA 203	Refrigeration Systems	3
HVA 205	Hydronic Systems	4
HVA 207	Commercial Industry Standards with Competency Exams	3

Minimum Credits Required for the Program: **17**

Heating, Ventilation, Air Conditioning and Refrigeration - Industrial Trade (CVHVIT)
Advanced Certificate
Program Effective Term: **Fall 2013**

This program is a capstone to HVAC-Residential Certification, and is designed for students who wish to develop skills in HVACR mechanics or installation. It prepares the student for industry-recognized certification (Commercial Industry Competency Exam) for entry-level employment in industrial heating, ventilation, and air conditioning. This program is designed to provide the student with theoretical and practical experiences in HVACR at the industrial level. Through intensive hands-on experiences, the student will develop knowledge and skills in sizing, layout, installation, maintenance, and troubleshooting HVACR equipment found in large buildings, industrial complexes, power plants, and other industrial settings.

Articulation:
Eastern Michigan University, several BS degrees.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/departments/curriculum/articulation.php?levelone=colleges

Program Admission Requirements:
Students must complete the Heating, Ventilation, Air Conditioning, and Refrigeration Residential Certificate (CTHVRR).

Core Courses		(7 credits)
HVA 201	Energy Audits	4
HVA 202	Air System Layout and Design	3

Major/Area Requirements		(9 credits)
HVA 204	Central Heating Plants	3
HVA 206	Central Cooling Plants	3
HVA 208	Codes and Industry Standards with Industrial ICE	3

Minimum Credits Required for the Program: **16**

Heating, Ventilation, Air Conditioning and Refrigeration (APHVCR)
Associate in Applied Science Degree
Program Effective Term: Fall 2013

This program is a capstone to both the Heating, Ventilation, Air Conditioning and Refrigeration - Industrial Trade and the Heating, Ventilation, Air Conditioning and Refrigeration - Commercial Trade Advanced Certificates. It provides a rigorous heating, ventilation, air-conditioning and refrigeration (HVACR) background with solid preparation for entry-level management positions or transfer to four-year programs offering bachelor degrees in HVACR, technology management, and other technically oriented fields. This program also provides opportunities to obtain advanced certifications which are recognized throughout the heating, ventilation and air-conditioning industry.

Articulation:
Eastern Michigan University, several BS degrees.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/departments/curriculum/articulation.php?levelone=colleges.

First Semester		(15 credits)
HVA 101	Heating, Ventilation and Air Conditioning I	4
HVA 102	HVAC Sheet Metal Fabrication	4
HVA 103	Heating, Ventilation, and Air Conditioning II	4
	Math Elective(s)	3-4

Second Semester		(13 credits)
HVA 105	Residential and Light Commercial Heating Systems	4
HVA 107	Residential and Light Commercial Air Conditioning Systems	4
HVA 202	Air System Layout and Design	3
WAF 104	Soldering and Brazing	2

Third Semester		(9 credits)
HVA 108	Residential HVAC Competency Exams and Codes	3
	Computer Lit. Elective(s)	3
	Arts/Human. Elective(s)	3

Fourth Semester		(14 credits)
HVA 201	Energy Audits	4
HVA 203	Refrigeration Systems	3
HVA 205	Hydronic Systems	4
	Nat. Sci. Elective(s)	3-4

Fifth Semester		(12 credits)
HVA 207	Commercial Industry Standards with Competency Exams	3
	Speech Elective(s)	3
	Soc. Sci. Elective(s)	3
	Writing Elective(s)	3-4

Minimum Credits Required for the Program:	**63**

Welding and Fabrication

Learn skills from beginning welding to advanced fabrication for a career as a welding maintenance mechanic.

Welding (CTWLDC)
Certificate
Program Effective Term: **Fall 2013**

This program prepares students for entry-level jobs involving gas welding, brazing, and various combinations of arc welding processes, where they work under the supervision of an experienced welding technician. The program also gives students a foundation for WCC's Advanced Certificate in Welding Mechanics.

Articulation:
Eastern Michigan University, several BS degrees.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/departments/curriculum/articulation.php?levelone=colleges.

Major/Area Requirements		(21 credits)
WAF 105	Introduction to Welding Processes	2
WAF 106	Blueprint Reading for Welders	3
WAF 111	Oxy-fuel Welding	4
WAF 112	Shielded Metal Arc Welding	4
WAF 123	Advanced Oxy-fuel Welding	4
WAF 124	Advanced Shielded Metal Arc Welding	4

Minimum Credits Required for the Program: **21**

Welding Mechanics (CVWLDA)
Advanced Certificate
Program Effective Term: Fall 2013

This program prepares students for jobs as a welding maintenance mechanic where students weld metal parts together according to layouts, blueprints, or work orders using gas welding or brazing and any combination of arc-welding processes. The credits in this program also may be applied toward an Associate in Applied Science Degree in Welding.

Articulation:
Eastern Michigan University, several BS degrees.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/departments/curriculum/articulation.php?levelone=colleges.

Program Admission Requirements:
Successful completion of the Welding Certificate (CTWLDC)

Major/Area Requirements		(24 credits)
WAF 200	Layout Theory Welding	3
WAF 210	Welding Metallurgy	3
WAF 215	Advanced Gas Tungsten Arc Welding	4
WAF 226	Specialized Welding Procedures	4
WAF 227	Basic Fabrication	3
WAF 229	Shape Cutting Operations	3
WAF 288	Gas Metal Arc Welding	4

Minimum Credits Required for the Program: **24**

Welding (APWLDT)
Associate in Applied Science Degree
Program Effective Term: Fall 2013

Some employers require or prefer employees to have an associate degree as a condition for employment or for advancement. Students can earn an AAS in Welding by completing the requirements listed below.

Articulation:
Eastern Michigan University, several BS degrees;
Pennsylvania College of Technology, BS degree.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/departments/curriculum/articulation.php?levelone=colleges.

First Semester		(13 credits)
WAF 105	Introduction to Welding Processes	2
WAF 111	Oxy-fuel Welding	4
WAF 112	Shielded Metal Arc Welding	4
	Math Elective(s)*	3-4

Second Semester		(14 credits)
WAF 106	Blueprint Reading for Welders	3
WAF 123	Advanced Oxy-fuel Welding	4
WAF 124	Advanced Shielded Metal Arc Welding	4
	Speech Elective(s)	3

Third Semester		(14 credits)
WAF 215	Advanced Gas Tungsten Arc Welding	4
WAF 288	Gas Metal Arc Welding	4
	Arts/Human. Elective(s)	3
	Computer Lit. Elective(s)	3

Fourth Semester		(13 credits)
WAF 200	Layout Theory Welding	3
WAF 210	Welding Metallurgy	3
WAF 226	Specialized Welding Procedures	4
	Soc. Sci. Elective(s)	3

Fifth Semester		(12 credits)
WAF 227	Basic Fabrication	3
WAF 229	Shape Cutting Operations	3
	Nat. Sci. Elective(s)	3-4
	Writing Elective(s)	3-4

Minimum Credits Required for the Program: **66**

Notes:

* MTH 157 is recommended.

School of Criminal Justice and Law Enforcement

These programs help students develop the skills and knowledge necessary for work in law enforcement and criminal justice. Completion of the Police Academy Certificate prepares the student to meet the Michigan Commission on Law Enforcement Standards (MCOLES) necessary for a career as a police officer. Students preparing for employment in occupations that do not require completion of the MCOLES/Police Academy, or that do require a four-year degree (such as most Federal employment) can begin their studies by obtaining a Criminal Justice Associate of Arts degree, which is transferrable to most baccalaureate programs. This degree is described in the Transfer and University Parallel Programs section of the catalog.

Criminal Justice and Law Enforcement

Considering a career in law enforcement or corrections? These programs prepare you for further study in these specialized fields.

Police Academy (CTPA)
Certificate

Program Effective Term: **Fall 2013**

The successful completion of this program is mandatory for anyone seeking law enforcement licensing in the State of Michigan. The Michigan Commission on Law Enforcement Standards (MCOLES) and the WCC Police Academy Advisory Committee have created the course content. The WCC Student Handbook, the MCOLES Policy and Procedure Manual, and the WCC Police Academy Daily Rules and Regulations will govern student conduct. The police academy is structured as an adult learning experience, and will require significant self-discipline on the part of the student. Teamwork is required. Just as sworn law enforcement officers operate under a code of honor which requires them to be above reproach in ethics and behavior, students will also be held to this same standard. MCOLES pre-enrollment is a corequisite of this course. Prospective students should review the "Selection and Employment Standards for Michigan Law Enforcement Officers" on the MCOLES Web site (mcoles.org).

Applying for Admission to the Program:
Students must have a minimum of 45 college credits prior to admission to the Police Academy.

Major/Area Requirements		(16 credits)
CJT 221	Law Enforcement Training	16

Minimum Credits Required for the Program: **16**

Program Information Report

Criminal Justice - Law Enforcement (APCJLE)
Associate in Applied Science Degree
Program Effective Term: Fall 2013

This program prepares students for certification to work in law enforcement jobs in the State of Michigan. Students must complete the academic program prior to entering the Police Academy component of the program.

Continuing Eligibility Requirements:
-Admission to the Police Academy component of this program (CJT 221) is based on passing reading, writing, and physical activity examinations as well as fingerprinting and criminal history checks.
-Students who do not enter the academy may complete the Criminal Justice Associate in Arts Degree instead of the Criminal Justice Law Enforcement Associate in Applied Science Degree, and will not be certified for employment.
-Students admitted to the Police Academy are required to purchase gym clothes, khaki uniforms, textbooks, and other supplies.
-Academy students are required to adhere to additional rules of behavior and discipline beyond the general code of conduct.

First Semester		(15 credits)
CJT 100	Introduction to Criminal Justice	3
ENG 100 or	Introduction to Technical and Workplace Writing	
ENG 111	Composition I	4
MTH 151 or	Technical Algebra	
MTH 160 or	Basic Statistics	
MTH 169	Intermediate Algebra	4
PEA 102	Cardiovascular Training*	1
	Computer Lit. Elective(s)	3

Second Semester		(15 credits)
CJT 111	Police/Community Relations	3
CJT 120	Criminal Justice Ethics	3
CJT 160	Criminal Justice Constitutional Law	3
COM 102	Interpersonal Communication	3
	Nat. Sci. Elective(s)	3

Third Semester		(17 credits)
CJT 224	Criminal Investigation	3
CJT 225	Seminar in Criminal Justice	3
PEA 105	Weight Training - Cybex/Free Weights	2
PSY 100 or	Introduction to Psychology	
PSY 200	Child Psychology	3
Elective	Complete one course from the restricted electives: CJT 170, CJT 223, SOC 100, SOC 202, SOC 205, SOC 207, or SOC 250	3
	Arts/Human. Elective(s)	3

Fourth Semester		(16 credits)
CJT 221	Law Enforcement Training	16

Minimum Credits Required for the Program: **63**

Notes:

*PEA 102 & PEA 105 are only offered in the fall and may be be taken during any fall semester.

It is recommended that students take one or two semesters of Spanish in addition to program requirements.

Program Information Report

Criminal Justice (AACJ)
Associate in Arts Degree
Program Effective Term: Fall 2013

This program helps prepare students for jobs in the courts and in corrections (such as probation and parole) as well as state and federal law enforcement. Most, but not all, of these jobs require at least a bachelor's degree and students can complete their first 3 years at WCC before transferring to other four-year schools such as EMU for their final year.

Articulation:
Davenport University, Bachelor degree;
Eastern Michigan University, BA degree and several BS degrees*;
Kaplan University, BS degree.

*For those interested in pursuing a degree in Criminology and Criminal Justice from EMU, students may take 30 additional credit hours at WCC and transfer a total of 94 credits to EMU towards a Bachelor's Degree (124 hours). The following additional classes are recommended: ANT 201, SOC 207, SOC 250, and PSY 257.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site:
http://www.wccnet.edu/departments/curriculum/articulation.php?levelone=colleges.

Program Admission Requirements:
Students must have an Academic Math Level of 3 to enroll in MTH 160. One year of high school algebra is recommended.

First Semester		(16 credits)
CJT 100	Introduction to Criminal Justice	3
CJT 111	Police/Community Relations	3
COM 102	Interpersonal Communication	3
ENG 111	Composition I	4
	Arts/Human. Elective(s)*	3

Second Semester		(16 credits)
CJT 120	Criminal Justice Ethics	3
CJT 154 or	Everyday Law: Law and Civil Liberties	
CJT 160	Criminal Justice Constitutional Law	3
CJT 209	Criminal Law	3
ENG 226	Composition II	3
MTH 160	Basic Statistics	4

Third Semester		(16 credits)
CJT 208	Criminal Evidence and Procedure	3
CJT 223	Juvenile Justice	3
PSY 100	Introduction to Psychology	3
	Computer Lit. Elective(s)	3
	Nat. Sci. Elective(s)*	4

Fourth Semester		(15 credits)
CJT 224	Criminal Investigation	3
CJT 170 or	Domestic and International Terrorism	
CJT 225	Seminar in Criminal Justice	3
PLS 112	Introduction to American Government	3
SOC 100	Principles of Sociology	3
	Arts/Human. Elective(s)*	3

Minimum Credits Required for the Program: **63**

Notes:

See the MACRAO list to make course selections. Transfer students should a select lab-based Natural Science course.

School of Culinary Arts and Hospitality Management

Find your passion in food, friends and elegant surroundings. Develop skills for an entry-level position in restaurant, hospitality or institutional settings. Whether your interests lie in pastry and wedding cakes, food preparation and marketing, or management of food service, these are the programs for you.

Washtenaw Community College offers programs at several levels for students who want to begin new careers, or advance in their existing careers. The first level is the certificate, which can vary from nine to thirty-six credits, depending on the field. Certificates generally prepare students for entry-level jobs.

The next level, an Associate in Applied Science, is available for some programs. For some career fields, it is possible to earn a certificate and an Associate in Applied Science degree in the same field. In these cases, the credit hours from the certificate can be applied to the credit hours needed for the Associate in Applied Science degree.

Culinary Arts and Hospitality Management

Develop the skills necessary for a career in the hospitality industry.

Baking and Pastry (CTBAKP)
Certificate
Program Effective Term: Fall 2013

This program prepares students for careers in commercial baking, where they will work in retail deli-bakeries, country clubs, resorts, hotels, and institutional food service operations. Courses can be applied toward the Associate in Applied Science Degree in Culinary and Hospitality Management.

Articulation:
Eastern Michigan University, BS degree.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/departments/curriculum/articulation.php?levelone=colleges.

Major/Area Requirements		(26 credits)
CUL 100	Introduction to Food Service and Hospitality Industry	2
CUL 104	Baking Science	2
CUL 110	Sanitation and Hygiene*	2
CUL 114	Fundamentals of Baking	3
CUL 115	Fundamentals of Pastry	3
CUL 116	Fundamental Culinary Principles	3
CUL 118	Principles of Nutrition	3
CUL 132	Basic Cake and Wedding Cake Design	2
CUL 140	Bakery Management and Merchandising	3
CUL 224	Principles of Cost Control	3

Minimum Credits Required for the Program: **26**

Notes:

CUL 110 must be taken as a pre- or co-requisite with any of the lab classes: CUL 114, CUL 115, CUL 132, CUL 140.

Culinary Arts (CFCULC)
Certificate
Program Effective Term: Fall 2013

This program prepares students for a position as a food production specialist in a hotel, restaurant, or institution, where sauteing, roasting, broiling, baking, vegetable preparation, producing soups and sauces, food storage, and sanitation will be among the skills they will use. The program also gives students a foundation for continued study toward an Associate in Applied Science in Culinary and Hospitality Management.

Articulation:
Eastern Michigan University, several BS degrees.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/departments/curriculum/articulation.php?levelone=colleges.

Major/Area Requirements		(33 credits)
CUL 100	Introduction to Food Service and Hospitality Industry	2
CUL 104	Baking Science	2
CUL 110	Sanitation and Hygiene*	2
CUL 114	Fundamentals of Baking	3
CUL 116	Fundamental Culinary Principles	3
CUL 118	Principles of Nutrition	3
CUL 120	Classical Kitchen Operations	3
CUL 121	Modern Kitchen Operations	3
CUL 145	Introduction to Dining Room Protocol	3
CUL 150	Food Service Management and Supervision	3
CUL 210	Advanced Kitchen Operations: Garde Manger**	3
CUL 224	Principles of Cost Control	3

Minimum Credits Required for the Program: **33**

Notes:

*CUL 110 must be taken as a pre- or co-requisite with any of the lab classes: CUL 114, CUL 120, CUL 121.
**CUL 210 is offered in spring semesters only.

Program Information Report

Hospitality Management (CFHMC)
Certificate
Program Effective Term: **Fall 2013**

This program prepares students for an entry-level supervisory position in the hospitality management industry such as a dining room manager in a restaurant, country club, hotel or retirement community. This certificate also equips students with the skills needed for an entry-level position in banquet and catering sales. In addition, it provides a foundation for continued study toward an Associate in Applied Science in Culinary and Hospitality Management, or serves as the first year study toward a 3 + 1 transfer toward a baccalaureate degree at a four-year college or university.

Articulation:
Eastern Michigan University, several BS degrees.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/departments/curriculum/articulation.php?levelone=colleges.

Major/Area Requirements		(28 credits)
BMG 207	Business Communication	3
CUL 100	Introduction to Food Service and Hospitality Industry	2
CUL 110	Sanitation and Hygiene*	2
CUL 118	Principles of Nutrition	3
CUL 150	Food Service Management and Supervision	3
CUL 151	Food Service Marketing	3
CUL 220	Organization/Management of Food Systems	3
CUL 224	Principles of Cost Control	3
CUL 250	Principles of Beverage Service	3
CUL 174	CUL Co-op Education I	3

Minimum Credits Required for the Program: **28**

Notes:

*CUL 110 must be taken as a pre- or co-requisite with any of the lab classes: CUL 114, CUL 115, CUL 120, CUL 121.

Program Information Report

Baking and Pastry Arts (APBPA)
Associate in Applied Science Degree
Program Effective Term: **Fall 2013**

Baking and Pastry Arts is a program that offers a focused hands-on professional approach to the art of baking and pastry, and will allow students to gain the necessary practical knowledge, theory and skill to become a successful and marketable pastry professional. This program prepares students for careers in pastry shops, restaurants, country clubs, hotels, catering facilities, institutional food service, as well as entrepreneurship.

First Semester		(14 credits)
CUL 110	Sanitation and Hygiene	2
Elective	Choose one elective from the following: BMG 273, CUL 226, a 100 level ART course.	3
	Arts/Human. Elective(s)	3
	Math Elective(s)	3
	Speech Elective(s)	3

Second Semester		(15 credits)
CUL 100	Introduction to Food Service and Hospitality Industry	2
CUL 104	Baking Science	2
CUL 116	Fundamental Culinary Principles	3
CUL 118	Principles of Nutrition	3
CUL 132	Basic Cake and Wedding Cake Design	2
	Computer Lit. Elective(s)	3

Third Semester		(17 credits)
CUL 114	Fundamentals of Baking	3
CUL 115	Fundamentals of Pastry	3
CUL 215	Advanced Cake Decorating	2
CUL 224	Principles of Cost Control	3
	Nat. Sci. Elective(s)	3
	Writing Elective(s)	3

Fourth Semester		(16 credits)
BMG 101	Entrepreneurship I: Finding Your Opportunity	3
CUL 140	Bakery Management and Merchandising	3
CUL 205	Pastry Arts and Design	3
CUL 211	Advanced Bread Production	4
	Soc. Sci. Elective(s)	3

Minimum Credits Required for the Program: **62**

Culinary and Hospitality Management (APCULD)
Associate in Applied Science Degree
Program Effective Term: **Fall 2013**

This program prepares students for a career as a professional culinarian in a restaurant, hospitality, or institutional setting. Culinary Arts professionals have a variety of responsibilities that may include supervising and coordinating the activities of food service workers or dining room employees, planning menus, estimating daily or weekly needs, ordering and maintaining inventories of supplies and equipment, and keeping records of meals served. The program also provides a foundation for continued culinary arts studies at a four-year college and for chef certification through the American Culinary Federation (ACF).

Articulation:
The Art Institute of Michigan, Bachelor degree;
Eastern Michigan University, several BS degrees.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site:
http://www.wccnet.edu/departments/curriculum/articulation.php?levelone=colleges.

First Semester		(13 credits)
CUL 100	Introduction to Food Service and Hospitality Industry	2
CUL 110	Sanitation and Hygiene*	2
	Arts/Human. Elective(s)	3
	Math Elective(s)	3-4
	Writing Elective(s)	3

Second Semester		(17 credits)
CUL 104	Baking Science	2
CUL 116	Fundamental Culinary Principles	3
CUL 118	Principles of Nutrition	3
CUL 145	Introduction to Dining Room Protocol	3
	Computer Lit. Elective(s)	3
	Speech Elective(s)	3

Third Semester		(6 credits)
	Soc. Sci. Elective(s)	3
	Nat. Sci. Elective(s)	3

Fourth Semester		(15 credits)
CUL 114	Fundamentals of Baking	3
CUL 115	Fundamentals of Pastry	3
CUL 120	Classical Kitchen Operations	3
CUL 121	Modern Kitchen Operations	3
CUL 150	Food Service Management and Supervision	3

Fifth Semester		(15 credits)
CUL 210	Advanced Kitchen Operations: Garde Manger	3
CUL 224	Principles of Cost Control	3
CUL 226	Advanced Dining Room and Beverage Management	3
CUL 230	Advanced Kitchen Operations: American Regional	3
CUL 231	Advanced Kitchen Operations: Global Cuisine	3

Minimum Credits Required for the Program: **66**

Notes:

CUL 110 must be taken prior or concurrently with any of the following lab classes: CUL 114, CUL 115, CUL 120, CUL 121.

Program Information Report

School of Digital Media Arts

Creativity abounds in the School of Digital Media Arts which encompasses the disciplines of animation, graphic design, internet professional, photography and digital video. The programs in Digital Media Arts introduce students to foundational skills in these disciplines and prepare them for creative jobs.

Washtenaw Community College offers programs at several levels for students who want to begin new careers, or advance in their existing careers. The first level is the certificate, which can vary from nine to thirty-six credits, depending on the field. Certificates generally prepare students for entry-level jobs.

The next level, an Associate Degree, is available for some programs. Credit hours from the certificate can be applied to the credit hours needed for the Associate Degree.

3D Animation

Learn the basics of three-dimensional animation used in videos, games and on the Web. This degree will prepare you for an entry-level position in digital modeling and animation.

3D Animation (CTANI)
Certificate
Program Effective Term: **Fall 2013**

The 3D Animation Certificate prepares students with fundamental skills for entry-level positions in the digital 3D modeling and animation industry and is a stepping stone to the Associate Degree in 3D Animation. Foundation areas of study include visual perception of 3D form and shape, volume/weight, surface mapping and lighting, basic 3D animation and motion graphic composition.

Major/Area Requirements		(27 credits)
ANI 145	Concept Development for Animation	2
ANI 150	3D Animation I: Modeling	4
ANI 155	Textures and Studio Lighting for Animation	4
ANI 160	Fundamentals of Movement and Animation	4
ANI 230	Motion and Sound	2
ANI 250	3D Animation II	4
ANI 260	3D Animation III	4
GDT 108	Photoshop Graphics	3

Minimum Credits Required for the Program: **27**

3D Animation (APANIM)
Associate in Applied Science Degree
Program Effective Term: Fall 2013

The Digital Animation program prepares students for entry-level positions in digital 3D modeling and animation for use in video, CD-ROM and DVD presentations, broadcast graphics, video game design, kiosks, print (still views), and the Web. Emphasis is on visual perception of 3D form and shape, volume/weight, surface mapping and lighting, basic 3D animation and motion graphic composition for video and internet ready applications.

Articulation:
Eastern Michigan University, BS degree.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: www.wccnet.edu/departments/curriculum/articulation.php?levelone=colleges.

Program Admission Requirements:
High school Macintosh-based course, or GDT 105 with a "C" or better, or instructor permission.

First Semester		(16 credits)
ANI 145	Concept Development for Animation	2
ANI 150	3D Animation I: Modeling	4
ART 111	Basic Drawing I	4
COM 101	Fundamentals of Speaking	3
	Math Elective(s)	3-4

Second Semester		(15 credits)
ANI 155	Textures and Studio Lighting for Animation	4
ANI 160	Fundamentals of Movement and Animation	4
ART 127	Life Drawing I	4
GDT 108	Photoshop Graphics	3

Third Semester		(9 credits)
GDT 106	Illustrator Graphics	3
	Computer Lit. Elective(s)	3
	Arts/Human. Elective(s)	3

Fourth Semester		(12 credits)
ANI 230	Motion and Sound	2
ANI 250	3D Animation II	4
ENG 107 or	Technical Writing I	
ENG 111	Composition I	3-4
	Nat. Sci. Elective(s)	3-4

Fifth Semester		(10 credits)
ANI 260	3D Animation III	4
VID 276	Video Graphics I	3
	Soc. Sci. Elective(s)	3

Minimum Credits Required for the Program: **62**

Digital Video
Complete one of these programs to learn how to create digitized video productions for the Web and other presentation forms.

Digital Video Production (CTDVPC)
Certificate
Program Effective Term: Fall 2013

This program prepares students for entry-level media production positions in organizations where they will create digitized video productions for the Web and other presentation forms that may be used for informational, documentary, instructional, commercial, artistic, or other purposes. The program provides instruction in all facets of video production from program design to hands-on recording through the editing process. Students also gain skills in the use of computer software applications.

Articulation:
Eastern Michigan University, BS degree.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet. edu/departments/curriculum/articulation.php?levelone=colleges.

Program Admission Requirements:
A high school Macintosh-based course, or GDT 105 with a "C-" or better, or instructor permission is recommended.

Major/Area Requirements		(21 credits)
VID 105	Foundations in Digital Video I	4
VID 125	Foundations in Digital Video II	4
VID 180	Television Studio I	4
VID 203	Web Video	3
VID 255	Green Screen I	3
VID 276	Video Graphics I	3

Minimum Credits Required for the Program: **21**

Digital Video Advanced Production (CVDVAP)
Advanced Certificate
Program Effective Term: **Fall 2013**

The advanced certificate in the Digital Video program concentrates on specialty aspects of production. Each course spends a full semester concentrating on the critical phases of pre-production, production and post-production (for example, screenplays, cinematography and editing). This curriculum begins with students' creation of a screenplay and continues with sound design, cinematography, direction, advanced green screen techniques, and television studio applications. A unique component to this curriculum allows each student to write their script at the starting point and produce their concept through each class and phase of pre-production, production, and post-production. Students have the option to either complete the curriculum with one final thesis project or complete multiple project exercises.

Program Admission Requirements:
Completion of the Digital Video Production Certificate or comparable industry experience.

Major/Area Requirements		(19 credits)
VID 180	Television Studio I	4
VID 210	Screenplays	3
Elective	Select four courses from the following: VID 185, VID 220, VID 230, VID 240, VID 250, VID 260.	12

Minimum Credits Required for the Program: **19**

Digital Video Production (AADVP)
Associate in Arts Degree
Program Effective Term: Fall 2013

The Associate in Arts Degree in Digital Video Production provides students with specialized training to develop proficiency in advanced and professional video production. Emphasis is placed on integrating content creation with Web skills.

Articulation:
Eastern Michigan University, BS degree.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet. edu/departments/curriculum/articulation.php?levelone=colleges.

First Semester		(17 credits)
ENG 111	Composition I	4
HUM 150	International Cinema	3
VID 105	Foundations in Digital Video I	4
	Speech Elective(s)	3
	Computer Lit. Elective(s)	3

Second Semester		(17 credits)
HUM 160	American Film	3
VID 125	Foundations in Digital Video II	4
VID 180	Television Studio I	4
VID 255	Green Screen I	3
	Math Elective(s)	3-4

Third Semester		(15 credits)
ENG 226	Composition II	3
VID 210	Screenplays	3
VID 276	Video Graphics I	3
Elective	Select a course from the VID discipline	3
	Soc. Sci. 1 Elective(s)	3

Fourth Semester		(13 credits)
VID 203	Web Video	3
VID 295	Portfolio and Project Seminar	3
	Nat. Sci. Elective(s)	4
	Soc. Sci. 2 Elective(s)	3

Minimum Credits Required for the Program: **62**

Graphic Design
From the foundations of visual communication through production techniques, this field allows you to utilize your creative and artistic abilities.

Program Information Report

Graphic Design (CFGDTC)
Certificate
Program Effective Term: **Fall 2013**

This program provides students with entry-level skills in graphic design and allows students to upgrade or expand their present skills. Students will focus on typography and the foundations of visual communication design for both print and on-screen media, and build skills in the most widely used graphic design software applications. This program provides credits towards the Associate in Applied Science Degree in Graphic Design.

Students should choose the appropriate faculty for academic advising based on their last name: Ingrid Ankerson (A-M), Kristine Willimann (N-Z).

Articulation:
Eastern Michigan University, several BS degrees.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/departments/curriculum/articulation.php?levelone=colleges.

Program Admission Requirements:
Good computer skills and aptitude are required to enroll in GDT computer-based courses. Students with no or minimal computer skills are encouraged to begin with GDT 105, Introduction to Mac Graphics. GDT courses are taught using Macintosh computers.

Major/Area Requirements		(23 credits)
GDT 100	Typography I	4
GDT 104	Introduction to Graphic Design	4
GDT 112	Principles and Problem Solving in Graphic Design	4
GDT 220	Publication Design	4
INP 150	Web Coding I	3
INP 154	Interaction Design I	4

Minimum Credits Required for the Program: **23**

Graphic Design (APGRD)
Associate in Applied Science Degree
Program Effective Term: Fall 2013

This program prepares students for a career as a graphic designer. Graphic designers work with writers, publishers, photographers, printers, and other specialists in the field of visual communication design to communicate, inform, instruct, or sell. Students may work on publications, advertising, or the Internet. The program focuses on developing skills in basic design theory, concept development, typography, the major graphic design software, and knowledge of production techniques for print and electronic media as exhibited in a portfolio. Creative and artistic ability is required for careers in graphic design, as well as originality and capacity for experimentation in visual problem-solving. Students also need an aptitude for developing strong skills with desktop computers and graphics software programs.

Graphic Design majors should see GDT faculty for academic advisors according to the first letter of their last name: Lind Babcock (A-L), Kristine Willimann (M-Z).

Articulation:
College for Creative Studies, BFA degree;
Eastern Michigan University, several BS degrees;
Savannah College of Art and Design, BFA degree.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/departments/curriculum/articulation.php?levelone=colleges.

Program Admission Requirements:
Basic proficiency with desktop computers is required to enroll in GDT computer-based courses. Students with no or minimal computer skills are encouraged to take GDT 105, Introduction to Mac Graphics.

Note: Graphic Design computer-based courses are taught on Macintosh computers.

First Fall Semester		(16 credits)
GDT 101	History of Graphic Design	3
GDT 104	Introduction to Graphic Design	4
INP 150	Web Coding I	3
	Soc. Sci. Elective(s)	3
	ENG 107 or ENG 111 or higher	3-4

First Winter Semester		(17 credits)
GDT 100	Typography I	4
GDT 112	Principles and Problem Solving in Graphic Design	4
INP 170	Web Coding II	3
	Speech Elective(s)	3
	Restricted Elective(s) ART 101, ART 102 , ART 111 , ART 112 , ART 114, ART 120, ART 122, ART 125, ART 127, ART 129, GDT 106, GDT 107, GDT 108, GDT 151, GDT 215, GDT 239, GDT 245, GDT 259 or any 100 level or higher ANI, INP, PHO or VID course.	3-4

Second Fall Semester		(14 credits)
GDT 220	Publication Design	4
INP 154	Interaction Design I	4
	MTH 125 or higher	3-4
	Restricted Elective(s) ART 101, ART 102 , ART 111 , ART 112 , ART 114, ART 120, ART 122, ART 125, ART 127, ART 129, GDT 106, GDT 107, GDT 108, GDT 151, GDT 215, GDT 239, GDT 245, GDT 259 or any 100 level or higher ANI, INP, PHO or VID course.	3-4

Second Winter Semester		(15 credits)
GDT 252	Advanced Digital Studio	4
GDT 290	Professional Practices	4
INP 254	Interaction Design II	4
	Nat. Sci. Elective(s)	3-4

Minimum Credits Required for the Program: **62**

Internet Professional

Join the Web development industry through the completion of these certificates and degree.

Web Graphic Design (CTWBGC)
Certificate
Program Effective Term: Fall 2013

This program is designed for students interested in the creative aspects of Web development. Courses focus on the knowledge and skills necessary for employment as a Web graphic designer.

Major/Area Requirements		(29 credits)
GDT 100	Typography I	4
GDT 104	Introduction to Graphic Design	4
GDT 112	Principles and Problem Solving in Graphic Design	4
INP 150	Web Coding I	3
INP 153	Designing User Experience I	3
INP 154	Interaction Design I	4
INP 170	Web Coding II	3
INP 254	Interaction Design II	4

Minimum Credits Required for the Program: **29**

Web Technology (CTWBTC)
Certificate
Program Effective Term: **Fall 2013**

This program is designed for students interested in the Web development industry. Students will create standards-compliant, accessible, and usable Web interfaces that meet both user and client needs.

Articulation:
Eastern Michigan University, several BS degrees.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/departments/curriculum/articulation.php?levelone=colleges.

Program Admission Requirements:
A high school course or equivalent course in basic computer skills, including use of the Internet.

Major/Area Requirements		(21 credits)
INP 150	Web Coding I	3
INP 153	Designing User Experience I	3
INP 170	Web Coding II	3
INP 203	Designing User Experience II	3
INP 233	Web Analytics and SEO	3
INP 253	Designing User Experience III	3
INP 261	Introduction to Web Programming	3

Minimum Credits Required for the Program: **21**

Web Application Development (CVWBDV)
Advanced Certificate
Program Effective Term: **Fall 2013**

This program is designed for students interested in Web application development and programming. Courses focus on the knowledge and skills necessary for creating database-enabled applications, dynamic content, and interactive Web sites.

Articulation:
Eastern Michigan University, BS degree.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site:
http://www.wccnet.edu/departments/curriculum/articulation.php?levelone=colleges.

Program Admission Requirements:
Students must complete the Web Technology Certificate or have significant programming and XHTML/CSS experience prior to starting this certificate

Major/Area Requirements		(16 credits)
INP 271	Client-Side Web Programming	3
INP 275	Web Database	3
INP 276	Mobile Web Development	4
INP 281	Server-Side Web Programming	3
INP 291	Programming with HTML5 and CSS3	3

Minimum Credits Required for the Program: **16**

Internet Professional (APINPD)
Associate in Applied Science Degree
Program Effective Term: **Fall 2013**

This is a comprehensive, rigorous program for students interested in a career in the Web development industry. Coursework prepares students for employment as Web developers, with options to specialize in Web application development and Web graphic design. Completion of the Web Technology Certificate and one of the related advanced certificates is required in order to complete the Internet Professional Associate in Applied Science Degree.

Articulation:
Eastern Michigan University, BS degree.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/departments/curriculum/articulation.php?levelone=colleges.

Continuing Eligibility Requirements:
For successful continuation in the program, a minimum grade of "C-" is required for all INP courses.

Minimum Concentration Credits Required for the Program: **61**
Complete one of the two Internet Professional Concentrations listed below. Check course prerequisites and meet with an INP advisor to determine the best sequence for taking courses.

Web Graphic Design: GDT 100, GDT 102, GDT 112, INP 154, INP 254

Web Application Development: INP 271, INP 275, INP 276, INP 281, INP 291

Internet Professional Concentrations

Web Application Development (WADV)		(61 credits)
First Semester		**(12 credits)**
ENG 107 or	Technical Writing I	
ENG 111	Composition I	3-4
INP 150	Web Coding I	3
INP 153	Designing User Experience I	3
	Soc. Sci. Elective(s)	3
Second Semester		**(12 credits)**
INP 170	Web Coding II	3
INP 203	Designing User Experience II	3
	Restricted Elective(s): Any 100 level or higher ANI, GDT, INP, PHO or VID course to reach 60 plus credits.	3
	Speech Elective(s)	3
Third Semester		**(12 credits)**
INP 233	Web Analytics and SEO	3
INP 253	Designing User Experience III	3
INP 261	Introduction to Web Programming	3
	Arts/Human Elective(s)	3
Fourth Semester		**(15 credits)**
	Math Elective(s)	3-4
	Nat. Sci. Elective(s)	3-4
INP 271	Client-Side Web Programming	3
INP 275	Web Database	3
	Restricted Elective(s): Any 100 level or higher ANI, GDT, INP, PHO or VID course to reach 60 plus credits.	3
Fifth Semester		**(6 credits)**
INP 281	Server-Side Web Programming	3
INP 291	Programming with HTML5 and CSS3	3
Sixth Semester		**(4 credits)**
INP 276	Mobile Web Development	4

Minimum Credits Required for the Concentration or Option: 61

Web Graphic Design (WBGP) (65 credits)

First Semester (16 credits)

Code	Course	Credits
ENG 107 or	Technical Writing I	
ENG 111	Composition I	3-4
INP 150	Web Coding I	3
INP 153	Designing User Experience I	3
	Soc. Sci. Elective(s)	3
GDT 104	Introduction to Graphic Design	4

Second Semester (17 credits)

Code	Course	Credits
INP 170	Web Coding II	3
INP 203	Designing User Experience II	3
	Speech Elective(s)	3
GDT 100	Typography I	4
GDT 112	Principles and Problem Solving in Graphic Design	4

Third Semester (16 credits)

Code	Course	Credits
INP 233	Web Analytics and SEO	3
INP 253	Designing User Experience III	3
INP 261	Introduction to Web Programming	3
	Arts/Human Elective(s)	3
INP 154	Interaction Design I	4

Fourth Semester (16 credits)

Code	Course	Credits
	Computer Lit. Elective(s)	3
	Math Elective(s)	3-4
	Nat. Sci. Elective(s)	3-4
INP 254	Interaction Design II	4
	Restricted Elective(s): Any 100 level or higher ANI, GDT, INP, PHO or VID course to reach 60 plus credits.	3-4

Minimum Credits Required for the Concentration or Option: 65

Minimum Credits Required for the Program: **61**

Photography

Develop skills in composition, processing and presentation needed for a satisfying career in professional photography or as a means of personal expression.

Photographic Imaging (CTPHOI)
Certificate
Program Effective Term: Fall 2013

This program prepares students for entry-level positions in the photographic industry and is a steppingstone to the Associate Degree in Photographic Technology. Foundation areas of study include: basic camera operation and composition skills; film and digital exposure and processing methods; studio lighting; and printing and presentation techniques.

Students should choose the appropriate faculty for academic advising based on their last name: Terry Abrams (A-G), Jennifer Baker (H-O), Donald Werthmann (P-Z).

Major/Area Requirements		(21 credits)
PHO 110	Introduction to the Darkroom	1
PHO 111	Photography I	4
PHO 117	Introduction to the Studio	4
PHO 127	Digital Photo Imaging I	4
PHO 228	Digital Photo Imaging II	4
PHO 122 or	Darkroom Techniques	
PHO 129	Black and White Digital Imaging	4

Minimum Credits Required for the Program: **21**

Photographic Technology (APPHOT)
Associate in Applied Science Degree
Program Effective Term: Fall 2013

This program provides a comprehensive foundation in digital and film based photography. Through a combination of required basic courses and specialized elective courses, the student customizes the program to his or her particular interest in the photographic industry. Students have opportunities to work with a variety of advanced photographic equipment including digital cameras, view cameras, traditional darkroom, and various types of studio and location lighting systems. Graduating students produce professional portfolios and self-promotional materials to find employment in a variety of areas such as photographic assisting, photojournalism, fine art, freelance, portrait and wedding photography. Students also complete the program to use photography as a means of personal expression, and as preparation for transferring to four-year baccalaureate programs.

Students should choose the appropriate faculty for academic advising based on their last name: Terry Abrams (A-G), Jennifer Baker (H-O), Donald Werthmann (P-Z).

Articulation:
Brooks Institute of Photograpy, BA degree;
College for Creative Studies, BFA degree;
Eastern Michigan University, several BS degrees;
Savannah College of Art and Design, BFA degree.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/departments/curriculum/articulation.php?levelone=colleges.

First Semester		(16 credits)
PHO 110	Introduction to the Darkroom	1
PHO 111	Photography I	4
PHO 127	Digital Photo Imaging I	4
	Writing Elective(s)*	4
	Computer Lit. Elective(s)	3

Second Semester		(15 credits)
PHO 117	Introduction to the Studio	4
PHO 122 or	Darkroom Techniques	
PHO 129	Black and White Digital Imaging	4
	Math Elective(s)**	4
Elective	Restricted Courses 1 - Complete additional credits from the PHO electives (100 level and above) and/or the following courses: ANI 150, ANI 155, ANI 160, GDT 100, GDT 104, GDT 106, GDT 107, GDT 108, GDT 112, INP 140, INP 150, VID 105, VID 125	3

Third Semester		(16 credits)
PHO 103	History of Photography***	3
PHO 211 or	Large Format Photography	
PHO 220	Advanced Studio Techniques	3
PHO 228	Digital Photo Imaging II	4
	Speech Elective(s)****	3
Elective	Restricted Courses 2 - Complete additional credits from the PHO electives (100 level and above) and/or the following courses: ANI 150, ANI 155, ANI 160, GDT 100, GDT 104, GDT 106, GDT 107, GDT 108, GDT 112, INP 140, INP 150, VID 105, VID 125	3

Fourth Semester		(17 credits)
PHO 230	Portfolio Projects	3
PHO 231	Portfolio Seminar	4
	Nat. Sci. Elective(s)	4
	Soc. Sci. Elective(s)	3
Elective	Restricted Courses 3 - Complete additional credits from the PHO electives (100 level and above) and/or the following courses: ANI 150, ANI 155, ANI 160, GDT 100, GDT 104, GDT 106, GDT 107, GDT 108, GDT 112, INP 140, INP 150, VID 105, VID 125	3

Minimum Credits Required for the Program: **64**

Notes:

*ENG 100 or ENG 111 is recommended
**MTH 151, MTH 157, MTH 160, or MTH 169 is recommended
***PHO 103 fulfills the Arts and Humanities general education requirement
****COM 101 or COM 102 is recommended

School of Information Technology

The School of Information Technology gathers the diverse areas that make up the computer technology of today. From basic programming languages to systems development through networking, these programs provide the core of information technology. Develop skills in computer networking or programming in the growing field of applied information technology.

Washtenaw Community College offers programs at several levels for students who want to begin new careers, or advance in their existing careers. The first level is the certificate, which can vary from nine to thirty-six credits, depending on the field. Certificates generally prepare students for entry-level jobs.

After completing a certificate, students can progress to the next level, the advanced certificate. The credit hours required for these programs also vary. This type of certificate provides a more specialized level of skill development, and often allows students to upgrade their positions at their places of employment.

The next level, an Associate in Applied Science, is available for some programs. For some career fields, it is possible to earn a certificate, an advanced certificate, and an Associate in Applied Science degree in the same field. In these cases, the credit hours from the certificate and advanced certificate can be applied to the credit hours needed for the Associate in Applied Science degree.

Alternatively, students can earn an AAS in Occupational Studies by completing a certificate, an advanced certificate (if it exists) and General Education requirements.

Computer Security

Foundations of Computer Security (CTFCS)
Certificate
Program Effective Term: **Fall 2013**

In this introductory program, students will develop the basic knowledge and skills that will qualify them for admission into the Network Security Advanced Certificate program. Students will receive an introduction to the principles of information assurance and will acquire basic skills in network and system administration.

Applying for Admission to the Program:
In order to meet the requirements of the market for jobs in network security, students should have significant professional or educational experience in network and system administration and advanced courses in network and system security.

Program Admission Requirements:
-An Academic Math Level of 3
-Students must also be experienced at installing and configuring computers and be comfortable with working at the computer command line with DOS.

Continuing Eligibility Requirements:
Students must maintain a grade of "C" or better in the program requirements.

Major/Area Requirements		(30 credits)
CIS 121	Linux/UNIX I: Fundamentals	3
CNT 201	Administering Microsoft Windows Client Operating Systems	3
CNT 206	Internetworking I - Fundamentals	4
CNT 211	Installing and Configuring Windows Server 2012	4
CNT 216	Internetworking II - Routers	4
CSS 180	Computer Security I	4
CSS 200	Computer Security II	4
CSS 205	Computer Security III	4

Minimum Credits Required for the Program: **30**

Network Security (CVNS)
Advanced Certificate
Program Effective Term: Fall 2013

This program is designed to meet the emerging demand for highly-skilled computer systems security professionals within the information technology industry and business community. This advanced certificate program builds on the concepts introduced in the Foundations of Computer Security Certificate and provides an in-depth examination of computer security technology with an emphasis on executing a vulnerability analysis of an organization network and preparing a design or network security. The student will be trained to use various tools to manage and secure networks, Windows environments and Web servers, as well as defense mechanisms for Virtual Private Networks (VPN), Host Intrusion Detection Systems (HIDS) and Network Intrusion Detection Systems (NIDS). In addition, the student will master the concepts, principles, types and topologies of firewalls including packet filtering, proxy firewalls, application gateways, circuit gateways and other computer security technology. Students must complete the Foundations of Computer Security Certificate program or have equivalent knowledge before enrolling in this program.

Articulation:
Eastern Michigan University, several BS degrees.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site:
http://www.wccnet.edu/departments/curriculum/articulation.php?levelone=colleges.

Applying for Admission to the Program:
In order to meet the requirements of the current job market, students of this program must have significant prior professional experience as Network and/or System Administrators or must demonstrate successful completion of certificate or degree programs in Network and System Administration.

Program Admission Requirements:
-An Academic Math Level of 3
-Substantial experience at installing and configuring computers and skill at working with the command line interface.
-Successful completion of the Foundations of Computer Security Certificate

Major/Area Requirements		(16 credits)
CNT 251	Designing Windows Server Security	4
CSS 210	Computer Security IV	4
CSS 212	Computer Security V	4
CSS 220	Computer Security VI	4

Minimum Credits Required for the Program: **16**

Networking
Develop and manage computer networks as a network administrator/engineer.

Computer Systems Technology (CTCSTC)
Certificate
Program Effective Term: Fall 2013

This program prepares students for employment as a microcomputer service technician. While preparing students to pass the Computer Technology Industry Association's (CompTIA) A+ Certification Examination, the program goes well beyond the requirements of the exam. The student will develop hands-on troubleshooting skills in solving hardware problems, working with operating systems, and relating to customers. This program also provides the foundation for Washtenaw Community College's two advanced certificates in computer networking.

Articulation:
Eastern Michigan University, BS degree.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet. edu/departments/curriculum/articulation.php?levelone=colleges.

Major/Area Requirements		(16 credits)
CST 118	Microsoft Command Line Fundamentals	2
CST 150 or	Computer Systems Technology I	
CST 160	Computer Technology I	4-5
CST 155 or	Computer Systems Technology II	
CST 165	Computer Technology II	4-5
CST 225	PC Networking	3
BMG 205 or	Creating the Customer Experience	
CST 174 or	CST Co-op I	
CST 270	Data Recovery and Analysis	3-4

Minimum Credits Required for the Program: **16**

Computer Networking Academy I (CVCNA1)
Advanced Certificate
Program Effective Term: **Fall 2013**

This Cisco Networking Academy program prepares students for a job as a network technician where they will install, configure, and troubleshoot Local Area Networks under the supervision of a network administrator. The focus is placed on cabling systems and internetworking hardware. It also gives students the knowledge they'll need to pass the Cisco Certified Network Associate Examination.

Program Admission Requirements:
Students must complete the Computer Systems Technology (CTCSTC) Certificate with a GPA of 2.0 or better or have equivalent industry experience to be admitted into the program.

Major/Area Requirements		(16 credits)
CNT 206	Internetworking I - Fundamentals	4
CNT 216	Internetworking II - Routers	4
CNT 226	Internetworking III - Switches	4
CNT 236	Internetworking IV - WANs	4

Minimum Credits Required for the Program: **16**

Computer Networking Operating Systems I (CVCNO)
Advanced Certificate
Program Effective Term: **Fall 2013**

This program lays a foundation in preparation for a profession as a Microsoft Certified IT Professional. Students will install, configure, and troubleshoot Microsoft Client Server Networks. The program is designed to deploy and manage both Windows Server 2003 and Server 2008 with Client Workstations in simulated real-life situations. Administering, managing, monitoring, and troubleshooting of Server 2008 Active Directory, Network Services, and other Server functions are all emphasized. All Server configured activities are tested out using Client Workstations to ensure they work, just as in a real business environment. The program is structured for both those who are working towards Microsoft Server 2003 MCSA/MCSE certifications, and/or Server 2008 MCTS/MCITP certifications. Also those already having certification who want to enhance their knowledge with the newer operating systems, as well as those who may just want to learn how to effectively implement these technologies are welcome.

Program Admission Requirements:
Completion of the Computer Systems Technology Program (CTCSTC) or CST 150 and CST 225 with a minimum grade of "C," passing the COMPTIA certification, or equivalent industry experience.

Major/Area Requirements		(15 credits)
CNT 201	Administering Microsoft Windows Client Operating Systems	3
CNT 211	Installing and Configuring Windows Server 2012	4
CNT 223	Administering Windows Server 2012	4
CNT 224	Configuring Advanced Windows Server 2012 Services	4

Minimum Credits Required for the Program: **15**

Notes:

This program is designed to be completed in a two semester time frame.

Computer Systems and Networking (APCSN)
Associate in Applied Science Degree
Program Effective Term: Fall 2013

In this program, students will learn about the latest desktop, server, and networking technologies. This program has a core of hardware, operating system and scripting that all students must complete. In addition to the common core subjects, students will select a specialized track in one of the following areas: Local and Wide Area Networking, Microsoft Network Operating Systems, Linux Network Operating Systems, Computer and Network Security, or Data Recovery.

Articulation:
Davenport University, Bachelor degree;
Eastern Michigan University, several BS degrees.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/departments/curriculum/articulation.php?levelone=colleges.

Minimum Concentration Credits Required for the Program: **61**
Select a concentration.

Computer Systems and Networking Concentrations

Computer and Network Security (CSEC)		(65 credits)

First Semester		(16 credits)
CST 118	Microsoft Command Line Fundamentals	2
CST 160	Computer Technology I	4
CST 165	Computer Technology II	4
	Math Elective(s)	3
	Speech Elective(s)	3

Second Semester		(16 credits)
CIS 121	Linux/UNIX I: Fundamentals	3
CNT 201	Administering Microsoft Windows Client Operating Systems	3
CNT 211	Installing and Configuring Windows Server 2012	4
CST 225	PC Networking	3
	Writing Elective(s)	3

Third Semester		(18 credits)
CNT 206	Internetworking I - Fundamentals	4
CNT 216	Internetworking II - Routers	4
CSS 200	Computer Security II	4
	Nat. Sci. Elective(s)	3
	Soc. Sci. Elective(s)	3

Fourth Semester		(15 credits)
CIS 161	Introduction to PowerShell	4
CSS 205	Computer Security III	4
CSS 210	Computer Security IV	4
	Arts/Human. Elective(s)	3

Minimum Credits Required for the Concentration or Option: 65

Data Recovery (DATR)		(61 credits)

First Semester		(16 credits)
CST 118	Microsoft Command Line Fundamentals	2
CST 160	Computer Technology I	4
CST 165	Computer Technology II	4
	Math Elective(s)	3
	Speech Elective(s)	3

Second Semester		(16 credits)
CIS 121	Linux/UNIX I: Fundamentals	3
CNT 201	Administering Microsoft Windows Client Operating Systems	3
CNT 211	Installing and Configuring Windows Server 2012	4

CST 225	PC Networking	3
	Writing Elective(s)	3

Third Semester		**(15 credits)**
CNT 206	Internetworking I - Fundamentals	4
CNT 216	Internetworking II - Routers	4
CST 270	Data Recovery and Analysis	4
	Soc. Sci. Elective(s)	3

Fourth Semester		**(14 credits)**
CIS 161	Introduction to PowerShell	4
CST 275	Data Recovery and Forensics	4
	Arts/Human. Elective(s)	3
	Nat. Sci. Elective(s)	3

Minimum Credits Required for the Concentration or Option: 61

Linux Network Operating System (LNOS) **(62 credits)**

First Semester		**(16 credits)**
CST 118	Microsoft Command Line Fundamentals	2
CST 160	Computer Technology I	4
CST 165	Computer Technology II	4
	Math Elective(s)	3
	Speech Elective(s)	3

Second Semester		**(16 credits)**
CIS 121	Linux/UNIX I: Fundamentals	3
CNT 201	Administering Microsoft Windows Client Operating Systems	3
CNT 211	Installing and Configuring Windows Server 2012	4
CST 225	PC Networking	3
	Writing Elective(s)	3

Third Semester		**(17 credits)**
CIS 206	Linux/UNIX II: Basic System Administration, Networking, and Security	3
CNT 206	Internetworking I - Fundamentals	4
CNT 216	Internetworking II - Routers	4
	Nat. Sci. Elective(s)	3
	Soc. Sci. Elective(s)	3

Fourth Semester		**(13 credits)**
CIS 161	Introduction to PowerShell	4
CIS 221	Linux/UNIX Programming and Scripting I	3
CIS 208	Linux/UNIX III: Intermediate System Administration, Networking, and Security	3
	Arts/Human. Elective(s)	3

Minimum Credits Required for the Concentration or Option: 62

Microsoft Network Operating System (MNOS) **(61 credits)**

First Semester		**(16 credits)**
CST 118	Microsoft Command Line Fundamentals	2
CST 160	Computer Technology I	4
CST 165	Computer Technology II	4
	Math Elective(s)	3
	Speech Elective(s)	3

Second Semester		**(16 credits)**
CIS 121	Linux/UNIX I: Fundamentals	3
CNT 201	Administering Microsoft Windows Client Operating Systems	3
CNT 211	Installing and Configuring Windows Server 2012	4
CST 225	PC Networking	3
	Writing Elective(s)	3

Program Information Report

Third Semester		**(14 credits)**
CNT 206	Internetworking I - Fundamentals	4
CNT 216	Internetworking II - Routers	4
	Nat. Sci. Elective(s)	3
	Soc. Sci. Elective(s)	3

Fourth Semester		**(15 credits)**
CIS 161	Introduction to PowerShell	4
CNT 223	Administering Windows Server 2012	4
CNT 224	Configuring Advanced Windows Server 2012 Services	4
	Arts/Human. Elective(s)	3

Minimum Credits Required for the Concentration or Option: 61

Local and Wide Area Networking (NETW)		**(61 credits)**

First Semester		**(16 credits)**
CST 118	Microsoft Command Line Fundamentals	2
CST 160	Computer Technology I	4
CST 165	Computer Technology II	4
	Math Elective(s)	3
	Speech Elective(s)	3

Second Semester		**(16 credits)**
CIS 121	Linux/UNIX I: Fundamentals	3
CNT 201	Administering Microsoft Windows Client Operating Systems	3
CNT 211	Installing and Configuring Windows Server 2012	4
CST 225	PC Networking	3
	Writing Elective(s)	3

Third Semester		**(14 credits)**
CNT 206	Internetworking I - Fundamentals	4
CNT 216	Internetworking II - Routers	4
	Nat. Science Elective(s)	3
	Soc. Sci. Elective(s)	3

Fourth Semester		**(15 credits)**
CIS 161	Introduction to PowerShell	4
CNT 226	Internetworking III - Switches	4
CNT 236	Internetworking IV - WANs	4
	Arts/Human. Elective(s)	3

Minimum Credits Required for the Concentration or Option: 61

Minimum Credits Required for the Program: **61**

Programming

Learn the foundation of computer programming or specialize in a programming language through these programs.

Foundations of Information Systems (CTFIS)
Certificate
Program Effective Term: Fall 2013

The Foundations of Information Systems certificate provides a conceptual framework for those students wishing to become a professional in computer information systems or computer programming. The student will be introduced to computer science programming logic, as well as developing algorithms to solve programming problems. In addition, students will acquire an understanding of the impact of information systems and information technology on the business, industrial, and other environments in which they will work as programmers or analysts.

Continuing Eligibility Requirements:
Students must maintain a minimum GPA of 2.0 or better.

Major/Area Requirements		(9 credits)
CIS 110	Introduction to Computer Information Systems	3
CIS 121	Linux/UNIX I: Fundamentals	3
CPS 120	Introduction to Computer Science	3

Minimum Credits Required for the Program: **9**

C++ Programming (CVCPGM)
Advanced Certificate
Program Effective Term: **Fall 2013**

This program prepares students for jobs as a computer programmer where they will write C++ code and develop applications utilizing object-oriented programming techniques. Students will also develop skills that can be applied to the related jobs of programmer/analyst and software architect.

Program Admission Requirements:
Prior programming experience is recommended. Students who have no programming experience should consider taking CPS 120.

Major/Area Requirements		(12 credits)
CPS 171	Introduction to Programming with C++	4
CPS 271	Object Features of C++	4
CPS 272	Data Structures with C++	4

Minimum Credits Required for the Program: **12**

Program Information Report

Program in Java (CVJVPR)
Advanced Certificate
Program Effective Term: Fall 2013

This program is intended for students who need to acquire skills in the Java programming language. The program also gives students skills that can be applied to the related jobs of programmer/analyst.

Program Admission Requirements:
Prior programming experience is recommended. Students who have no programming experience should consider taking CPS 120.

Major/Area Requirements		(16 credits)
CPS 161	An Introduction to Programming with Java	4
CPS 261	Advanced Java Concepts	4
Elective	Select two of the following courses: CPS 251, CPS 255, CPS 278.	8

Minimum Credits Required for the Program: **16**

Web Database Programming (CVWDPR)
Advanced Certificate
Program Effective Term: **Fall 2013**

This program focuses on the development of Web databases and e-commerce applications. It is intended for students with a strong programming background. The coursework emphasizes server-side programming. CSS and professional HTML are given minimal coverage (students interested in these topics should consider the Web Technology certificate).

Program Admission Requirements:
Completion of CPS 161 or CPS 171 with a minimum grade of "B-" or instructor consent.

Major/Area Requirements		(16 credits)
CPS 276 or	Web Programming Using Apache, MySQL, and PHP	
CPS 278	Java Server Programming	4
Elective	Select 3 additional classes from the following (not to repeat the choice made above): CIS 282*, CPS 251, CPS 261, CPS 276, CPS 278, CPS 293	11-12
Elective	Select one additional elective to meet a minimum of 16 credits if CIS 282 is chosen*	1-0

Minimum Credits Required for the Program: **16**

Computer Science: Programming in Java (ASCSPJ)
Associate in Science Degree
Program Effective Term: Fall 2013

This program prepares students to transfer to Eastern Michigan University to complete a bachelor's degree in Computer Science or Applied Computer Science and to pursue careers in computer science fields such as computer systems programming and analysis, software development and maintenance, and applications programming.

Articulation:
Eastern Michigan University, BS degree;
Kaplan University, BS degree.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/departments/curriculum/articulation.php?levelone=colleges.

Program Admission Requirements:
Students need an Academic Math Level of 4 or higher to enroll in MTH 176.

First Semester		(14 credits)
CPS 161	An Introduction to Programming with Java	4
Elective	MTH 176 or higher 4 credit math course	4
	Arts/Human. 1 Elective(s)	3
	Computer Lit. Elective(s)	3

Second Semester		(15 credits)
ENG 111	Composition I	4
CPS 261	Advanced Java Concepts	4
CPS 276	Web Programming Using Apache, MySQL, and PHP	4
	Soc. Sci. 1 Elective(s)***	3

Third Semester		(17 credits)
COM 225	Intercultural Communication*	3
CPS 278	Java Server Programming	4
	Nat. Sci. Elective(s)**	4
	Soc. Sci. 2 Elective(s)***	3
Elective	Students must complete 100-level or above transferrable courses to reach a minimum of 60 credits. Possible CIS/CPS electives include: CIS 121, CIS 282, CPS 171, CPS 255, CPS 271 or CPS 272.	3

Fourth Semester		(16 credits)
CPS 251	Android Programming Using Java	4
ENG 226	Composition II	3
	Arts/Human. 2 Elective(s)	3
	Soc. Sci. 3 Elective(s)***	3
Elective	Students must complete 100-level or above transferrable courses to reach a minimum of 60 credits. Possible CIS/CPS electives include: CIS 121, CIS 282, CPS 171, CPS 255, CPS 271 or CPS 272.	3-12

Minimum Credits Required for the Program: **62**

Notes:

*Satisfies EMU's Diverse World Requirement.
**Students transferring to a four-year institution should choose a lab-based, MACRAO-approved science course.
***Choose three courses from at least two disciplines.

See an advisor to choose courses that meet the requirements of the program to which you are transferring.

Information Systems: Programming in C++ (ASISPC)
Associate in Science Degree
Program Effective Term: **Fall 2013**

This program prepares students to transfer to complete a bachelor's degree in Business Administration with a major in Computer Information Systems. Undergraduates and graduates of CIS programs are prepared to create and maintain information systems for organizations, manage information systems projects, and develop strategies for effective use of enterprise information resources.

Articulation:
Eastern Michigan University, several BS degrees.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/departments/curriculum/articulation.php?levelone=colleges.

Program Admission Requirements:
Students need an Academic Math Level of 4 to enroll in MTH 176.

First Semester		(14 credits)
COM 225	Intercultural Communication*	3
CPS 171	Introduction to Programming with C++	4
ENG 111	Composition I	4
	Computer Lit. Elective(s)	3

Second Semester		(17 credits)
CIS 121	Linux/UNIX I: Fundamentals	3
CPS 271	Object Features of C++	4
ENG 226	Composition II	3
	MTH 176 or higher 4 credit math course	4
	Arts/Human. 1 Elective(s)	3

Third Semester		(15 credits)
CPS 276	Web Programming Using Apache, MySQL, and PHP	4
	Nat. Sci. Elective(s)**	4
	Soc. Sci. 1 Elective(s)***	3
	Electives Students must complete 100-level or above transferrable courses to reach a minimum of 60 credits. Possible CIS/CPS electives include: CIS 282, CPS 161, CPS 251, CPS 255, CPS 261, CPS 278	4

Fourth Semester		(17 credits)
CPS 272	Data Structures with C++	4
	Arts/Human. 2 Elective(s)	3
	Soc. Sci. 2 Elective(s)***	3
	Soc. Sci. 3 Elective(s)***	3
	Electives Students must complete 100-level or above transferrable courses to reach a minimum of 60 credits. Possible CIS/CPS electives include: CIS 282, CPS 161, CPS 251, CPS 255, CPS 261, CPS 278	4

Minimum Credits Required for the Program: 63

Notes:

*Satisfies EMU's Diverse World Requirement
**Students transferring to a four-year institution should choose a lab-based, MACRAO-approved science course.
See an advisor to choose courses that meet the requirements of the program to which you are transferring.
***Choose three courses from at least two disciplines.

This course sequencing aligns with students starting in the Fall semester. Students starting the Winter semester should switch the order in which they take CPS 272 and CPS 276.

Systems Development and Administration
Develop and manage computer systems using universal operating systems.

Program Information Report

Linux/UNIX Systems I (CTLUX1)
Certificate
Program Effective Term: Fall 2013

This program introduces students to the Linux and UNIX operating systems and prepares them to safely run their own home servers.

Articulation:
Eastern Michigan University, BS degree.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site:
http://www.wccnet.edu/departments/curriculum/articulation.php?levelone=colleges.

Program Admission Requirements:
Completion of a CIS (above CIS 100), CPS, or CSS course, or permission of instructor.

Major/Area Requirements	(12 credits)
CIS 121 Linux/UNIX I: Fundamentals	3
CIS 206 Linux/UNIX II: Basic System Administration, Networking, and Security	3
CIS 208 Linux/UNIX III: Intermediate System Administration, Networking, and Security	3
CIS 221 Linux/UNIX Programming and Scripting I	3

Minimum Credits Required for the Program: **12**

Notes:

The following sequence of courses is recommended. Please check course descriptions for pre and co-requisites:

I	*II*
CIS 121	*CIS 206*
	CIS 208
	CIS 221

Program Information Report

School of Music and Performing Arts

Students learn basic creative and performance skills in music, drama and dance and how they are applied in a professional setting. Whether you are exploring your own talents, coordinating the talents of others, or practicing the techniques you will need to make a living at your craft, the School of Music and Performing Arts provides the fundamentals you need.

Washtenaw Community College offers a certificate for students who want to begin new careers, or advance in their existing careers. The certificate can vary from nine to thirty-six credits, depending on the field. Certificates generally prepare students for entry-level jobs. Students preparing for a four-year degree program can begin their studies by obtaining a Liberal Arts Transfer Associate in Arts degree, which is transferrable to most baccalaureate programs. This degree is described in the Transfer and University Parallel Programs section of the catalog.

Alternatively, students can earn an AAS in Occupational Studies by completing a certificate and General Education requirements.

Music and Performing Arts

Develop the skills for a career in music engineering or production through this certificate program.

Fine and Performing Arts (CTFPA)
Certificate
Program Effective Term: **Fall 2013**

In this program, students are given the opportunity to develop and refine the skills used in their craft. The student's career plans are enriched through the opportunity to develop a plan for self-management. Together, these two areas will help students determine their short-and-long term career goals.

Major/Area Requirements		(15 credits)
ART 130 or	Art Appreciation	
ART 131 or	Art Appreciation through Art Museum Experiences	
MUS 180	Music Appreciation: Our Musical World	3
ART 285 or	Self-Management for Working Artists	
MUS 285	Self Management for Working Artists	3
	Choose nine credits from a single discipline in either ART, DAN*, DRA or MUS*	9

Minimum Credits Required for the Program: **15**

Notes:

*Credit for courses that can be repeated for credit will be counted only two times toward the minimum of nine credits, regardless of the number of times the course can be repeated.

Music Production/Engineering (CTMPRO)
Certificate
Program Effective Term: **Fall 2013**

This program is designed for students who want to develop skills in music production and engineering that can be applied to jobs in TV, radio, and music studios. It provides the student with the knowledge and skills necessary for employment in jobs such as a music sequencer or sound engineer, operating mixing consoles for a variety of events including band production, concerts, music festivals, and running studios. Students will develop skills in audio recording, computer applications, sound reinforcement, and sequencing and programming. While in the program, students will be affiliated with the International Alliance of Theatrical Stage Employees, and will assist WCC Media Services in producing events for the College.

Major/Area Requirements		(20 credits)
MUS 162	Music Sequencing and Programming	3
MUS 170	Computer Applications in Music	3
MUS 175	Audio Recording Technology I	3
MUS 245	Music Producing and Arranging	2
MUS 248	Sound Reinforcement for Stage	3
MUS 275	Audio Recording Technology II	3
MUS 285	Self Management for Working Artists	3

Minimum Credits Required for the Program: **20**

School of Nursing and Health Sciences

Find your place in the growing field of health care. The School of Nursing and Health Sciences provides a variety of programs designed to prepare the student for entry-level positions in dental assisting, pharmacy technology, physical therapist assistant, radiography, nursing assistant or professional nursing. The health care foundations certificate provides a starting point for prospective nursing and health science students or provides the general education courses to move from completion of a certificate program into an associate degree program.

Washtenaw Community College offers programs at several levels for students who want to begin new careers, or advance in their existing careers. The first level is the certificate, which can vary from nine to thirty-six credits, depending on the field. Certificates generally prepare students for entry-level jobs.

After completing a certificate, students can progress to the next level, the advanced certificate. The credit hours required for these programs also vary. This type of certificate provides a more specialized level of skill development, and often allows students to upgrade their positions at their places of employment.

The next level, an Associate in Applied Science, is available for some programs. For some career fields, it is possible to earn a certificate, an advanced certificate, and an Associate in Applied Science degree in the same field. In these cases, the credit hours from the certificate and advanced certificate can be applied to the credit hours needed for the Associate in Applied Science degree.

Alternatively, students can earn an AAS in Occupational Studies by completing a certificate, an advanced certificate and General Education requirements.

Certified Surgical Technology

Prepare for a career in Surgical Technology, working in operating rooms and surgical suites.

Central Sterile Processing Distribution Technician (CTCPDT)
Certificate   **UNDER CONSTRUCTION**
Program Effective Term: Fall 2013

This certificate programs prepares the student for an occupation in central processing and sterilization of hospital instrumentation, supplies and equipment. Students will apply theories and practices of central service departments contained in hospitals, ambulatory surgery centers or clinics. The courses provide the fundamentals of central processing, supply and distribution and provide instruction and practice in aseptic technique. Upon completion of this program, the student earns a certificate and may be eligible to sit for the International Association of Healthcare Central Service Material Management National Certifying Examination.

Continuing Eligibility Requirements:
-Negative TB skin test
-Complete Health History Form (physical examination)
-Hepatitis immunization series or titers on file
-Health Insurance
-Current BLS/CPR certification
-Minimum GPA of C- in all SUR courses
-Background Check/Drug Screen/Finger printiung per policy of hospital

First Semester		(10 credits)
BIO 147	Hospital Microbiology	1
HSC 101	Healthcare Terminology	1
SUR 106	Central Sterile Processing Distribution Theory I	2
SUR 107	Central Sterile Processing Distribution Clinical I	2
SUR 126	Central Sterile Processing Distribution Theory II	2
SUR 127	Central Sterile Processing Distribution Clinical II	2

Second Semester		(8 credits)
SUR 146	Central Sterile Processing Distribution Theory III	2
SUR 147	Central Sterile Processing Distribution Clinical III	2
SUR 166	Central Sterile Processing Distribution Theory IV	2
SUR 167	Central Sterile Processing Distribution Clinical IV	2

Minimum Credits Required for the Program: **18**

Certified Surgical Technology (APSRGT)
Associate in Applied Science Degree
Program Effective Term: Fall 2013

A certified surgical technologist (ST) serves the patient's interest primarily by providing assistance to the surgeon. The surgical technologist's primary task during an operative procedure is to anticipate the intraoperative needs of the surgeon and surgical patient. Students in this program must be well grounded in the basic sciences, especially anatomy, microbiology, and pathophysiology. The surgical technologist contributes to global patient care by serving as a team member who monitors the surgical environment along with the other team members.

In order for students to become a certified surgical technologist they must successfully complete a CAAHEP accredited program by Accreditation Review Council on Education in Surgical Technology and Surgical Assisting (ARC/STSA). WCC has modeled our program on accreditation standards and values CAAHEP accreditation.

Program Admission Requirements:
Student applications are reviewed on a regular basis. Upon acceptance of the application, the student will be placed on the Certified Surgical Technology program waitlist. Students are encouraged to complete required general education courses and other non-SUR courses while on the waitlist until they are notified of their program start date. Minimally, students are required to complete semester one courses before proceeding into the formal Certified Surgical Technology program, which begins with their second course semester.

Program Initiation:
Each year approximately 24 students move from the waitlist into the formal program initiation. Students are taken from the waitlist in numerical order in which they were admitted, with priority given to Washtenaw County residents. Please review the "Admission and Waitlist Process for High Demand Programs" document that is posted on the following website:http://www4.wccnet.edu/studentservices/studentconnection/admissions/. This document explains WCC's waitlist process and priority level.

Applying for Admission to the Program
A formal application to the program is required. Application packets may be downloaded from the WCC Web site: www4.wccnet.edu/departments/health/ Completed and signed applications must be delivered to the Health Admissions Technician at the Student Connection, located on the second floor of the Student Center Building. An application to the Certified Surgical Technology program will not be accepted until all admission requirements are completed.

Requirements for application are:
- Academic Math Level of 3 or MTH 167
- HSC 101 with a minimum grade of "B-" (2.7 on a 4.0 scale)
- BIO 111 with a minimum grade of "B-" (2.7 on a 4.0 scale)
- Minimum cumulative college GPA of 2.7. Only transcripts that provide an admission requirement course will be used in calculation of the cumulative GPA. If a transcript is submitted for an admission requirement course, the cumulative transcript GPA will be used in a weighted calculation of the cumulative GPA requirement.
- Criminal background check (review application for details)
- Demonstrate proficiency in the English language
- Declaration of residency status (note that Washtenaw County residents are given priority in program initiation).
Admission to the Certified Surgical Technology program is contingent upon students declaring that they have specific physical and cognitive abilities. These requirements are detailed in the Certified Surgical Technology program admission packet. WCC reserves the right to request that students successfully demonstrate the specific cognitive and physical abilities related to the Certified Surgical Technology program.

Continuing Eligibility Requirements:
- Program courses are sequential and complemented with appropriate support courses. All courses must be completed with a grade of "C" or better for academic support courses.
- Minimum "C+" or better for all SUR courses
- Students may be required to have additional criminal background checks and/or fingerprinting prior to the start of a clinical sequence as requested by specific clinical facilities. Failure to receive an acceptable criminal background/fingerprinting check at any time, will result in dismissal from the program.
- Completed health history form (physical examination)
- Negative TB skin test
- Current Health Insurance
- Current BLS/CPR certification

Program Information Report

First Semester		(13 credits)
BIO 147	Hospital Microbiology	1
MTH 167	Math Applications for Health Science	3
	Speech Elective(s)	3
	Writing Elective(s)	3-4
	Elective credit to reach 60 hours	3

Second Semester		(14 credits)
SUR 110	Introduction to Surgical Technology/Surgical Patient	3
SUR 130	Surgical Asepsis/Surgical Instruments	3
SUR 170	Surgical Pharmacology	2
	Computer Lit. Elective(s)	3
	Elective credit to reach 60 hours	3

Third Semester		(14 credits)
SUR 180	Surgical Procedures I	3
SUR 181	Surgical Procedures I Clinical	2
SUR 210	Surgical Procedures II	3
SUR 211	Surgical Procedures II Clinical	2
	Soc. Sci. Elective(s)	3
	Elective credit to reach 60 hours	1-3

Fourth Semester		(13 credits)
PHL 244	Ethical and Legal Issues in Health Care	3
SUR 230	Surgical Procedures III	3
SUR 231	Surgical Procedures III Clinical	2
SUR 250	Surgical Technology Seminar	3
SUR 270	Surgical Safety, Hazards and Biomedical Science	2

Major/Area Requirements		(6 credits)
BIO 111	Anatomy and Physiology - Normal Structure and Function*	5
HSC 101	Healthcare Terminology*	1

Minimum Credits Required for the Program:　　　　　　　　　**60**

Notes:

*See Program Admission Requirements section.

Clinical Medical Assistant

Clinical Medical Assistant (CTCMA)
Certificate
Program Effective Term: Fall 2013

This program prepares the student for entry-level positions in ambulatory settings such as doctors' offices, clinics, nursing homes, hospitals, pharmaceutical or insurance companies, or public health facilities where health information is prepared, analyzed, and retrieved. The student learns to perform receptionist duties, prepare charts and reports, schedule and bill patients, code and submit bills to insurance companies. The student will demonstrate performance in patient-care duties such as patient assessment and interviewing, perform duties such as taking vital signs, phlebotomy, injections, supplies and instrument care, performing medical procedures, and assisting during examinations. A nonpaid clinical internship is arranged by faculty and included in this program using clinical organizations in the area.

In order for students to become a certified medical assistant and use the title of CMA (AAMA), they must successfully complete a CAAHEP/MAERB accredited program. Then sit for and pass the AAMA sponsored CMA (AAMA) exam. WCC has modeled our program on accreditation standards and values CAAHEP accreditation.

Applying for Admission to the Program:
A formal application to the program is required. Application packets may be downloaded from the WCC Web site: www4.wccnet.edu/departments/health/ Completed and signed applications must be delivered to the Health Admissions Technician at the Student Connection, located on the second floor of the Student Center Building. An application to the Clinical Medical Assistant program will not be accepted until all admission requirements are met.

Requirements for application are:
-Academic Math Level of 2
-HSC 101 with a minimum grade of "B-" (2.7 on a 4.0 scale)
-BIO 109 Essentials of Human Anatomy and Physiology or BIO 111 with a minimum grade of "B-" (2.7 on a 4.0 scale)
- Minimum cumulative college GPA of 2.7. Only transcripts that provide an admission requirement course will be used in calculation of the cumulative GPA. If a transcript is submitted for an admission requirement course, the cumulative transcript GPA will be used in a weighted calculation of the cumulative GPA requirement.
-Criminal background check (review application for details)
-Demonstrate proficiency in the English language
-Declaration of residency status (note that Washtenaw County residents are given priority in program initiation).
Admission to the Clinical Medical Assistant program is contingent upon students declaring that they have specific physical and cognitive abilities. These requirements are detailed in the Clinical Medical Assistant program admission packet. WCC reserves the right to request that students successfully demonstrate the specific cognitive and physical abilities related to the Clinical Medical Assistant program.

Program Admission Requirements:
Student applications are reviewed on a regular basis. Upon acceptance of the application, the student will be placed on the Clinical Medical Assistant (CTCMA) program waitlist. Students are encouraged to complete required general education courses and other non-CMC courses while on the waitlist until they are notified of their program start date. Minimally, students are required to complete semester one courses before proceeding into the formal Clinical Medical Assistant program, which begins with their second course semester.

Program Initiation:
Each year approximately 24 students move from the waitlist into the formal program initiation. Students are taken from the waitlist in numerical order in which they were admitted, with priority given to Washtenaw County residents. Please review the "Admission and Waitlist Process for High Demand Programs" document that is posted on the following website:http://www4.wccnet.edu/studentservices/studentconnection/admissions/. This document explains WCC's waitlist process and priority level.

Continuing Eligibility Requirements:
-Program courses are sequential and complemented with appropriate support courses. All courses must be completed with a grade of "C" or better for support courses.
-Minimum "C+" or better for all CMC courses
-Students may be required to have additional criminal background checks and/or fingerprinting prior to the start of a clinical sequence as requested by specific clinical facilities. Failure to receive an acceptable criminal background/fingerprinting check at any time, will result in dismissal from the program. Students may be asked to submit to a drug test at any time while in the program.
-Completed health history form (physical examination)
-Negative TB skin test
-Current vaccination record
-Current health insurance
-Current BLS/CPR with First Aid certification

Program Information Report

First Semester		(11 credits)
BOS 175	Medical Office Communication	2
BOS 223	Medical Office Procedures	3
HSC 115	Clinical and Lab Procedures for Office Assistants	3
HSC 116	Phlebotomy for Healthcare Professionals	2
HSC 131	CPR/AED for the Professional Rescuer and First Aid	1

Second Semester		(13 credits)
BOS 185	Medical Computer Skills and Electronic Health Records	3
BOS 224	Medical Office Insurance and Billing	4
CMC 116	Clinical Application Skills	2
CMC 121	Human Disease and Pharmacology	2
CMC 230	Bench Test and Laboratory Procedures	2

Third Semester		(4 credits)
CMC 290	Clinical Experience Seminar	1
CMC 299	Clinical Experience	3

Major/Area Requirements		(6 credits)
BIO 109 or	Essentials of Human Anatomy and Physiology*	
BIO 111	Anatomy and Physiology - Normal Structure and Function*	5
HSC 101	Healthcare Terminology*	1

Minimum Credits Required for the Program: **34**

Notes:

See Applying for Admission to the Program for course requirements.

Dental Assisting

Prepare for a career as a certified dental assistant through the completion of this program.

Dental Assisting (CFDAC)
Certificate
Program Effective Term: **Fall 2013**

This program prepares students for entry-level dental assisting positions in a variety of settings such as private dental offices, dental schools, the military, and dental insurance offices. The curriculum includes the required dental radiography courses that allow graduates to expose dental radiographs in the State of Michigan. The program also prepares students for the Dental Assisting National Board (DANB) examination, which leads to the nationally recognized status of a Certified Dental Assistant (CDA). As a CDA, graduates assist in the treatment of patients. Graduates of the program are also prepared to take the Michigan State Board of Dentistry examination, which gives recognition as a Registered Dental Assistant (RDA). As an RDA in the State of Michigan, graduates can perform specific intra-oral functions generally performed by a dentist. The program is accredited by the American Dental Association Commission on Dental Accreditation, 211 East Chicago Avenue, Chicago, Illinois 60611.

Students may enroll in this program in one of two pathways. Pathway I is the format for the student who is not employed in a dental office. Pathway II (ADAEP) is the advanced standing option for the dental assistant with two or more years of experience as a dental assistant who has passed all three portions of the Dental Assisting National Board (DANB) CDA examination. These pathways are described in detail at http://www.wccnet.edu/health/dental.php.

For more detailed information regarding the health care programs at WCC, please visit our "Welcome to Health Care" home page at http://www4.wccnet.edu/departments/health

Program Admission Requirements:
A formal application to the program is required. Application packets may be downloaded from the WCC Web site.
- http://www4.wccnet.edu/departments/health/

Completed and signed applications must be delivered to the Health Admissions Technician at the Student Connection, located on the second floor of the Student Center Building.

Admission to the Dental Assisting Program is on a first-come basis for qualified applicants who have met all the admission requirements. A limited number of students are admitted to the Dental Assisting Program.

It is strongly advised that students complete the general education requirement of ENG 111 or BMG 207 before entering the Dental Assisting Program.

Requirements for application for Pathway I:
- All applicants are required to successfully complete ACS 1035 Introduction to Online Learning.
http://www.wccnet.edu/academics/classes/online/introduction-class/
- As part of skill validation prior to clinical placement, all students must demonstrate a proficiency in the English language.
- Applicants must undergo a criminal background check.
- Applications will be accepted prior to high school graduation or GED completion.
- Overall cumulative high school GPA or college GPA must be a minimum of 2.3.
- Admission to the Dental Assisting Program is contingent upon students declaring that they have specific physical and cognitive abilities. WCC reserves the right to request that applicants successfully demonstrate the specific cognitive and physical abilities related to the Dental Assisting Program.
- Completion of HSC 101 Healthcare Terminology (1 credit) with a grade of C+ (GPA 2.3) or better.
- Contact the Dental Assisting Department at 734-973-3332 or Jodi Neuman at jneuman@wccnet.edu

Requirements for application for Pathway II:
- All applicants are required to successfully complete ACS 1035 Introduction to Online Learning.
- Applicants must undergo a criminal background check.
- Applicants must pass all 3 portions of the Dental Assisting National Board (DANB) CDA examination
- Applicants must be employed in a dental office. The dentist/mentor will need to validate skills in the office and sign an agreement form.
- Contact the Dental Assisting Department at 734-973-3338 or Kathleen Weber at weber@wccnet.edu.

Continuing Eligibility Requirements:
- Program courses are sequential and complemented with appropriate support courses. All dental courses must be completed with a grade of "C" or better in order to graduate from this program.
- A current CPR card is required prior to enrolling in DEN 130 Clinical Practice.
- Completion of satisfactory physical examination must be documented on the WCC Report of Medical History form by the date specified during orientation. This form contains verification of childhood immunizations, negative TB test, and evidence of the Hepatitis B vaccination.
- Students must maintain personal health insurance throughout the program.

Program Information Report

- All students must be 18 years of age prior to the start of Dental Radiography DEN 108.

Minimum Option Credits Required for the Program: **38**

Dental Assisting Options

Pathway I		(38 credits)

First Semester		(14 credits)
DEN 102	Managing Safe Practice in Dentistry	1
DEN 106	Biomedical Science for Dental Assistants	2
DEN 107	Oral Anatomy	2
DEN 108	Dental Radiography	2
DEN 110	Basic Clinical Dental Assisting	4
DEN 112	Dental Materials	3

Second Semester		(12 credits)
DEN 118	Preventive Dentistry	2
DEN 120	Oral Diagnosis	1
DEN 128	Dental Radiography Practicum	1
DEN 129	Oral Pathology and Dental Therapeutics	2
DEN 130	Clinical Practice	2
DEN 131	Principles of Dental Specialties	4

Third Semester		(12 credits)
DEN 202	Advanced Clinical Practice	2
DEN 204	Advanced Functions	4
DEN 212	Dental Practice Management	3
BMG 207 or	Business Communication	
ENG 111	Composition I*	3-4

Minimum Credits Required for the Concentration or Option: 38

Pathway II (ADAEP)		(38 credits)

DANB Exam		(22 credits)
	Students must pass all three portions of the Dental Assisting National Board (DANB) Certified Dental Assistant (CDA) exam prior to entry.	22

First Semester		(16 credits)
DEN 204	Advanced Functions	4
DEN 230	Alternative Dental Assisting Education Project	9
BMG 207 or	Business Communication	
ENG 111	Composition I*	3-4

Minimum Credits Required for the Concentration or Option: 38

Minimum Credits Required for the Program: **38**

Notes:

*If you are planning to pursue an Associate's degree.

Dental Assisting Certificate and Degree Completion
Students completing the Dental Assisting courses outlined above will obtain a Certificate in Dental Assisting. Students may also complete an associate degree by using the same core dental assisting courses in addition to completing the general education requirements and electives for an Associate in Applied Science Degree in Dental Assisting.

Health Care Foundations

This certificate program can provide the essential basic skills to prepare for a specialized health care program.

Health Care Foundations (CTHCF)
Certificate
Program Effective Term: Fall 2013

This program helps students acquire basic knowledge and skills in math, foundational sciences, healthcare terminology and general education courses. The certificate fulfills major pre-admission requirements for Nursing, Physical Therapist Assistant, Radiography and general education requirements for an Associate in Applied Science degree. It provides students applying for a "high demand" health care associates degree program with a certificate for the completion of most general education and/or pre-admission course requirements of the intended program. Students who plan to enter health care programs are encouraged to contact a counselor.

Minimum Concentration Credits Required for the Program: **23**
Select one of the concentrations to complete.

Health Care Foundations Concentrations

Nursing Intent		(27 credits)
BIO 111	Anatomy and Physiology - Normal Structure and Function	5
COM 101 or	Fundamentals of Speaking	
COM 102 or	Interpersonal Communication	
COM 200	Family Communication	3
ENG 111	Composition I	4
HSC 100	Basic Nursing Assistant Skills	4
HSC 101	Healthcare Terminology	1
HSC 131	CPR/AED for the Professional Rescuer and First Aid	1
MTH 167	Math Applications for Health Science	3
PHL 244	Ethical and Legal Issues in Health Care	3
PSY 100	Introduction to Psychology	3

Physical Therapist Assistant Intent		(25 credits)
BIO 111	Anatomy and Physiology - Normal Structure and Function	5
COM 101 or	Fundamentals of Speaking	
COM 102	Interpersonal Communication	3
ENG 111	Composition I	4
HSC 101	Healthcare Terminology	1
HSC 131	CPR/AED for the Professional Rescuer and First Aid	1
MTH 160	Basic Statistics	4
PHL 244	Ethical and Legal Issues in Health Care	3
PSY 100	Introduction to Psychology	3
PTA 102	Introduction to Physical Therapy	1

Radiography Intent		(25 credits)
BIO 109 or	Essentials of Human Anatomy and Physiology	
BIO 111	Anatomy and Physiology - Normal Structure and Function	4-5
COM 101	Fundamentals of Speaking	3
ENG 111	Composition I	4
HSC 101	Healthcare Terminology	1
HSC 131	CPR/AED for the Professional Rescuer and First Aid	1
MTH 169	Intermediate Algebra	4
PHL 244	Ethical and Legal Issues in Health Care	3
RAD 100	Introduction to Diagnostic Imaging	2
SOC 100	Principles of Sociology	3

No Specialty		(23 credits)
BIO 101 or	Concepts of Biology	
BIO 102 or	Human Biology	
BIO 109 or	Essentials of Human Anatomy and Physiology	
BIO 111	Anatomy and Physiology - Normal Structure and Function	4-5
COM 101 or	Fundamentals of Speaking	
COM 102 or	Interpersonal Communication	
COM 200	Family Communication	3
ENG 111	Composition I	4
HSC 101	Healthcare Terminology	1
HSC 131	CPR/AED for the Professional Rescuer and First Aid	1

HSC 100 or	Basic Nursing Assistant Skills	
PTA 102 or	Introduction to Physical Therapy	
RAD 100	Introduction to Diagnostic Imaging	1-4
MTH 160 or	Basic Statistics	
MTH 167 or	Math Applications for Health Science	
MTH 169	Intermediate Algebra	3-4
PHL 244	Ethical and Legal Issues in Health Care	3
PSY 100 or	Introduction to Psychology	
SOC 100	Principles of Sociology	3

Minimum Credits Required for the Program: **23**

Notes:

Chemistry:
CEM 090 Introductory Chemistry or high school chemistry is a required support course, with a grade of "C" or better.

Health Program Preparation

Health Program Preparation (ASHPP)
Associate in Science Degree
Program Effective Term: Fall 2013

This program is designed for students who plan to pursue a health-related degree program at WCC or Bachelor of Science in Nursing (traditional or accelerated) or other health-related program at another college or four-year institution. The student will complete the common healthcare program prerequisites as outlined in the catalogs for local Michigan colleges.

Continuing Eligibility Requirements:
Minimum cumulative GPA of 2.8

First Semester		**(15 credits)**
CIS 100 or	Introduction to Computer Productivity Apps	
CIS 110	Introduction to Computer Information Systems	3
ENG 111	Composition I	4
	Math General Education	4
	Nat. Sci. General Education	4

Second Semester		**(16 credits)**
ENG 226	Composition II	3
	Speech General Education	3
	Soc. Sci. General Education	3
	Science Elective**	4
	Area Studies Elective***	3

Third Semester		**(14 credits)**
	Arts/Human. General Education	3
	Math Elective*	4
	Science Elective**	4
	Area Studies Elective***	3

Fourth Semester		**(15 credits)**
	Arts/Human. General Education	3
	Soc. Sci. General Education	3
	Area Studies Elective***	3
	Area Studies Elective***	3
	Area Studies Elective***	3

Minimum Credits Required for the Program: **60**

Notes:

Select a math elective: MTH 160, MTH 167, MTH 169, MTH 176, or higher
*** Select any two science electives: BIO 101, BIO 102, BIO 103, BIO 104, BIO 109, BIO 111, BIO 208, BIO 212, BIO 237, CEM 105, CEM 111, CEM 122, CEM 140*
****Select courses as designated for your intended program and school of choice.*

Nursing
Prepare for a career in a variety of health care settings through these certificate and associate in applied science degree program.

Nursing Assistant Skills Training (CCNAST)
Certificate of Completion
Program Effective Term: **Fall 2013**

This state certified three-week program prepares students for employment in a variety of health care settings from nursing homes to hospitals where they will work as a Certified Nurse Aide (CNA). CNA evaluation is mandated for employment in long-term care facilities. Upon completion of the program, individuals will be qualified for multiple job opportunities with good starting salaries. Positions frequently offer flexibility and variety, as well as a sense of self-satisfaction for "making a difference" in a person's health.

Rene Stark is the advisor for the main campus/weekend program. Cynthia Brown is the advisor for the extension centers.

Program Admission Requirements:
Training takes place in the classroom, lab, and clinical settings within the community. One-hundred percent (100%) attendance is mandatory. There are no make-up days. Students are expected to have their textbook on the first day of class. Program admission requires a minimum age of 17 and documentation of a negative TB status. A criminal background clearance check is required which will be done in the agency/clinical. Entry assessment testing is required.

Major/Area Requirements	(4 credits)
HSC 100 Basic Nursing Assistant Skills	4

Minimum Credits Required for the Program: **4**

Nursing Transfer (EMU School of Nursing) (APNURE)
Associate in Applied Science Degree
Program Effective Term: Fall 2013

This WCC honors program prepares students for a smooth transition into the third and fourth years of Eastern Michigan University's School of Nursing (EMU-SoN) BSN program. Individuals will receive a solid science foundation and begin taking nursing courses during the first two years at WCC. Students will not be eligible for registered nurse (RN) licensure until completion of the EMU-SoN program. WCC students will graduate with an Associate in Applied Science Degree.

Susan Travis is the Pre-Admission Advisor. Melina Roberts is the Post-Admission Advisor.

For more detailed information regarding the health care programs at WCC, please visit our "Welcome to Health Care" home page at http://www4.wccnet.edu/departments/health

Articulation:
Eastern Michigan University, BSN degree.

Copies of articulation agreements can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site:
http://www.wccnet.edu/departments/curriculum/articulation.php?levelone=colleges.

Program Admission Requirements:
WCC is suspending admission to this program until Fall 2013 when the next new class will be admitted.

An application and acceptance to the program is required. The application deadline is February preceding each Fall admission cycle. Since students are required to follow a pre-determined, full-time course sequence, it is essential that students meet with the Health Programs Counselor BEFORE starting any coursework and complete the Mandatory Meeting form with the appropriate signatures. (Students who wish to transfer to nursing programs at other four-year colleges or universities should check with an advisor or counselor for a transfer guide to that institution).

Sixteen (16) students are admitted each Fall semester to the Nursing Transfer Program.

Students must complete a second application for the Nursing Transfer (EMU School of Nursing) program after being admitted to Washtenaw Community College. Further, the student must meet all admission requirements of both WCC and Eastern Michigan University.
 Click here for the APNURE Application Packet. http://www4.wccnet.edu/departments/health/

Applicants must meet the following minimum admission requirements to be considered for admission to the WCC/EMU-SoN program:

1. Minimum cumulative GPA of 3.4 for high school
   OR
   Minimum cumulative college GPA of 3.4 (calculated on minimum of 12 credits)

2. Minimum SAT score of 1001 or minimum ACT composite score of 22
   OR
   12 college credits with a minimum cumulative GPA of 3.4

3. Minimum grade of "B" in all required science courses

4. Completion of the following required high school coursework or equivalent college level course
   a. Four (4) units of high school English
      OR
      minimum three (3) college credits of Composition I (ENG 111 at WCC)
   b. Three (3) units of high school math (Algebra I and II, Geometry)
      OR
      WCC's Academic Math Level of 3, MTH 160, MTH 167, MTH 169 or any math level 4 or higher course
   c. One (1) unit of high school chemistry
      OR
      minimum four (4) credits of college chemistry including lab (CEM 090 at WCC)
   d. One (1) unit of high school biology
      OR
      minimum four (4) credits of college biology including lab (BIO 101 at WCC)
   e. Four (4) units of high school foreign language and/or social science and/or laboratory science
      OR

minimum three (3) college credits in a foreign language, social science or laboratory science
course. The laboratory science course must be in addition to the course(s) required above.
   f. Four (4) units of other high school academic courses
      OR
      minimum three (3) college credits in any academic subject (WCC course numbered 100 and above)

5. Students who have a GED certificate are considered to have completed all items above except the chemistry and biology requirements. GED recipients must also submit a copy of their high school transcript. GED recipients must document completion of their biology and chemistry via their high school transcript and/or completion of an appropriate college class.

6. Minimum score of 80% on a pre-admission math test

7. Criminal background check clearance (refer to Information Release Authorization form in the admission packet)

8. Signed Abilities Statement on file

9. TOEFL Scores
   Internet-based version = 89 or higher
   Reading = 22 or higher
   Speaking = 24 or higher
   Listening = 23 or higher
   Writing = 20 or higher

Continuing Eligibility Requirements:
1. This transfer program is designed for full-time students.

2. Students are required to submit all health records completed between May 1 and July 25, by July 25 before enrolling in NUR 122, and annually update TB, BLS and HIPAA training.

3. Students must possess a current Certified Nurse Aide (CNA) certification prior to the NUR 102/106 course sequence.

4. Students are required to have additional criminal background checks and/or fingerprinting prior to
the start of a clinical sequence as requested by specific clinical facilities. Failure to receive an
acceptable criminal background/fingerprinting check at any time will result in dismissal from the
nursing program.

5. Students are expected to maintain math competency in drug dosage calculations throughout the program. MTH 167 is an optional preparatory math course to assist students to achieve this competency.

6. Students must apply for graduation from WCC.

7. To be admitted to EMU-SoN, the student must have:
-A minimum of 2.0 in all nursing courses (i.e. NUR 102, NUR 106, NUR 115, NUR 122, NUR 130, NUR 222)
-A minimum of 3.0 in these science courses (i.e. BIO 111, BIO 237, CEM 140). Note: All science courses must be completed within ten (10) years of beginning the program at EMU.
-A minimum of 2.0 in SOC 100, PSY 100, ENG 111, MTH 160, COM elective, HSC 147, BIO 212
-A cumulative GPA of 3.0 in CEM 140, ENG 111, PSY 100, BIO 111, HSC 147, (ANT 201 or ANTH 135), whether completed at WCC or EMU.
-An overall cumulative GPA of 3.0 at WCC

8. Students are only allowed to repeat a maximum of two (2) nursing courses, which includes BIO 212 Pathophysiology. Further, a student may only repeat a failed nursing course one (1) time. Any failures in nursing courses taken prior to admission to EMU-SoN (i.e. NUR courses and BIO 212 taken at WCC) are counted toward dismissal and permanent dismissal decisions.

9. Students must take ATI exams for Fundamentals of Pharmacology.

10. Students must complete all other health requirements and criminal background checks per EMU-SoN policy.

First Semester	(16 credits)
	Fall

BIO 111	Anatomy and Physiology - Normal Structure and Function	5
CIS 100 or	Introduction to Computer Productivity Apps	
CIS 110	Introduction to Computer Information Systems	3
ENG 111	Composition I	4

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NUR 122	Nursing as a Societal and Interpersonal Profession	4

Second Semester		**(15 credits)**
	Winter	
BIO 237	Microbiology	4
CEM 105	Fundamentals of Chemistry	4
HSC 147	Growth and Development	3
NUR 130	Health Promotion and Risk Reduction	4
	(Need CNA certification before taking NUR 102/NUR 106)	

Third Semester		**(10 credits)**
	Spring/Summer	
BIO 212	Pathophysiology: Alterations in Structure and Function	4
ENG 226	Composition II	3
PSY 100	Introduction to Psychology	3

Fourth Semester		**(14 credits)**
	Fall	
CEM 140	Organic Biochemistry	4
Elective	Speech	3
MTH 160	Basic Statistics	4
NUR 115	Pharmacology	3

Fifth Semester		**(13 credits)**
	Winter	
Elective	Take a 2nd course from the PSY discipline	3
NUR 102	Fundamentals of Nursing	2
NUR 106	Fundamentals of Nursing - Lab and Clinical Practice	4
NUR 222	Health Assessment Throughout the Lifespan	4

Sixth Semester		**(3 credits)**
	Spring/Summer	
PHL 244	Ethical and Legal Issues in Health Care	3
ANT 201	Introduction to Cultural Anthropology*	0-3
Elective	Select one of the following Humanities courses: ART 143, ART 150, COM 225, DAN 180, ENG 181, ENG 213, ENG 214, ENG 224, HUM 150, HUM 170, HUM 175*	0-3

Minimum Credits Required for the Program: **71**

Notes:

*Optional for receiving the MACRAO stamp prior to transfer

See WCC-EMU articulation agreement for a description of the additional credit hours that can be taken at WCC.

Nursing, Registered (APNURS)
Associate in Applied Science Degree
Program Effective Term: Fall 2013

This program prepares students for the National Council Licensure Examination for Registered Nurses (NCLEX-RN) and for challenging and exciting jobs in all settings of health care, from the hospital to home care. Students will gain proficiency in technical aspects of nursing care, such as medication administration, treatments and procedures, and use of medical technology, and they will receive personal satisfaction from their ability to make a difference in someone's life and health. Students will also earn credits that transfer to area RN-BSN completion programs.

The Registered Nursing program has both a high number of interested and qualified applicants and a limited number of spaces. As such, this program moves students through a process of application, admission, waitlist, and finally program initiation.

For more detailed information regarding the health care programs at WCC, please visit our "Welcome to Health Care" home page at http://www4.wccnet.edu/departments/health

Articulation:
Eastern Michigan University, BSN degree;
Kaplan University, BS degree;
University of Michigan - Flint, BSN degree.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/departments/curriculum/articulation.php?levelone=colleges.

Applying for Admission to the Program:
A formal application to the program is required. Application packets may be downloaded from the WCC Web site. Download the Registered Nursing program application packet: http://www4.wccnet.edu/departments/health/. Completed and signed applications must be delivered to the Health Admissions Technician at the Student Connection, located on the second floor of the Student Center Building. Students will be given information about how to prepare and complete the preadmission test, Test of Essential Academic Skills, or TEAS, at this time. An application to the Nursing program will not be accepted until all admission requirements are met.

Requirements for application are:
-Academic Math Level of 3, MTH 160, MTH 167, MTH 169 or any math level 4 or higher course
-HSC 101 with a minimum grade of "B-" (2.7 on a 4.0 scale)
-BIO 111 with a minimum grade of "B-" (2.7 on a 4.0 scale)
-Current Certified Nurse Aide (CNA) state certification
-Minimum cumulative college GPA of 2.7. Only transcripts that provide an admission requirement course will be used in calculation of the cumulative GPA. If a transcript is submitted for an admission requirement course, the cumulative transcript GPA will be used in a weighted calculation of the cumulative GPA requirement.
-Student declaring that she/he has the specific physical and cognitive abilities detailed in the nursing admission packet. WCC reserves the right to request, before or during the program, that students successfully demonstrate the specific physical and cognitive abilities related to the Nursing program.
-Students receiving an acceptable criminal background check for purposes of identifying a student who could not continue in the program due to a felony conviction (within the last 15 years) or misdemeanor conviction against a vulnerable adult or child (within the last 10 years). Any cost, if indicated, for these checks or for subsequent fingerprinting, is the responsibility of the student.
-Demonstrate proficiency in the English language
-Declaration of residency status (note that Washtenaw County residents are given priority in program initiation).
-Pass the Test of Essential Academic Skills (TEAS) within three (3) attempts by achieving the following minimum scores based on the current TEAS version. http://www4.wccnet.edu/departments/health/nursing/teas.php

For Version 5.0:

Math proficiency - 60 percent or higher
Reading proficiency - 70 percent or higher
English proficiency - 60 percent or higher
Science proficiency - 45 percent or higher
Overall TEAS score - 60 percent or higher

*If you take the TEAS at an institution outside of WCC, you must request to have an official ATI transcript sent to the Health Admissions Office.
**Minimum scores are subject to change based on new versions released by ATI.

Program Admission Requirements:
Student applications are reviewed on a regular basis. Upon acceptance of the application, the student will be placed on the Nursing

program waitlist. Students are encouraged to complete required general education courses and other non-nursing courses while on the waitlist until they are notified of their program start date. Minimally, students are required to complete semester one courses before proceeding into the formal nursing program, which begins with their second nursing course semester.

Program Initiation:
Each year approximately 80 students move from the waitlist to the formal program initiation. Students are taken from the waitlist in the order in which they were admitted, with priority given to Washtenaw County residents. Following the completion of the fifteen credits of general education and required support courses, students will begin their formal nursing program. This will consist of four (4) semesters during each of which they will take a minimum of twelve (12) occupationally specific credit hours for a total of 47 occupationally specific credit hours.

Continuing Eligibility Requirements:
-Program courses are sequential and complemented with appropriate support courses. All courses must be completed with a grade of "C" or better for support courses and "C+" or better in nursing courses.
-Students are required to adhere to rules of the Nursing Code of Ethics published in the Nursing Program Student Handbook.
-Students are required to have additional criminal background checks and/or fingerprinting prior to the start of a clinical sequence as requested by specific clinical facilities. Failure to receive an acceptable criminal background/fingerprinting check at any time, will result in dismissal from the nursing program.
-Students should be aware that the Michigan Board of Nursing may deny a license to an applicant who has been convicted of a crime or is addicted to drugs or alcohol.
-Students in the Nursing program will be required to purchase special uniforms and supplies throughout the duration of the program.
-Students are required to submit health records annually while in the program between May 1 and July 25.

First Semester		**(15 credits)**
ENG 111	Composition I*	4
COM 101 or	Fundamentals of Speaking*	
COM 102 or	Interpersonal Communication*	
COM 200	Family Communication*	3
MTH 167	Math Applications for Health Science*	3
BIO 147	Hospital Microbiology**	1
BIO 212	Pathophysiology: Alterations in Structure and Function*	4

Second Semester		**(12 credits)**
HSC 147	Growth and Development*	3
NUR 102	Fundamentals of Nursing	2
NUR 106	Fundamentals of Nursing - Lab and Clinical Practice	4
NUR 115	Pharmacology	3

Third Semester		**(12 credits)**
HSC 138	General and Therapeutic Nutrition*	2
NUR 123	Medical-Surgical Nursing I	3
NUR 124	Medical-Surgical Nursing I - Clinical Practice	2
NUR 131	Nursing of the Childbearing Family	3
NUR 132	Nursing of the Childbearing Family - Clinical Practice	2

Fourth Semester		**(13 credits)**
NUR 223	Medical-Surgical Nursing II	3
NUR 224	Medical-Surgical Nursing II - Clinical Practice	2
NUR 255	Mental Health Nursing	3
NUR 256	Mental Health Nursing - Clinical Practice	2
PSY 100	Introduction to Psychology*	3

Fifth Semester		**(14 credits)**
NUR 231	Nursing of Children	3
NUR 232	Nursing of Children - Clinical Practice	2
NUR 283	Medical-Surgical Nursing III	3
NUR 284	Medical-Surgical Nursing III - Clinical Practice	3
PHL 244	Ethical and Legal Issues in Health Care*	3

Major/Area Requirements		**(6 credits)**
BIO 111	Anatomy and Physiology - Normal Structure and Function	5
HSC 101	Healthcare Terminology	1

Current C.N.A. certification
BIO 111 and HSC 101 are taken prior to admission to the program. Please see "Applying for Admission to the Program."

Minimum Credits Required for the Program: **72**

Notes:

*Courses noted may be taken while on the Nursing program waitlist, but not later than the scheduled semester.
**If you are planning to pursue a BSN degree, it is strongly recommended that you take BIO 237 Microbiology, in place of BIO 147.
BIO 147 will not transfer to a four-year university.

Pharmacy Technology

Work with a professional pharmacist to meet the medication and customer service needs of individuals in a variety of settings.

Pharmacy Technology (CTPHAR)
Certificate
Program Effective Term: Fall 2013

This certificate program prepares students for pharmacy technician entry-level positions in hospitals, retail stores, and other specialty areas of pharmacy practice, where they work under the supervision of a registered pharmacist. Students learn to blend a high attention to detail with patient care. This is a full time program and courses are required to be completed in sequence.

For more detailed information regarding the health care programs at WCC, please visit our "Welcome to Health Care" home page at http://www4.wccnet.edu/departments/health

Articulation:
Eastern Michigan University, several BS degrees.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/departments/curriculum/articulation.php?levelone=colleges.

Applying for Admission to the Program:
A limited number of students are admitted to the Pharmacy Technology program each year. Application packets may be downloaded from the WCC Web site. Download the Pharmacy Technology program application packet:
http://www4.wccnet.edu/departments/health/
Completed and signed applications must be delivered to the Health Admissions Technician at the Student Connection, located on the second floor of the Student Center Building.
Applicants will be screened based on the following criteria:

 - Completion and submission of an application for admission to the Pharmacy Technology program
 - Completion of all prerequisite courses (Major Area Requirements)
 - Date of application to the program
 - Residency status (Washtenaw County residents are given priority)

Program Admission Requirements:
Applicants must complete the following WCC courses or equivalent transfer college courses with a grade of "C+" (minimum GPA of 2.3) or better:
   - MTH 167 Math Applications for Health Science or MTH 169 Intermediate Algebra
   - BIO 101 Concepts of Biology or higher level college biology course
   - ENG 111 English Composition
   - CIS 100 Introduction to Computers and Software Applications or CIS 110 Introduction to Computer
     Information Systems
   - Overall cumulative high school GPA or college GPA (if the student has completed 12 college credits
     or more) must be a minimum of 2.3 or better.

Admission to the Pharmacy Technology program is contingent upon students declaring that they have specific physical and cognitive abilities. These requirements are detailed in the Pharmacy Technology program admission packet. WCC reserves the right to request that students successfully demonstrate the specific cognitive and physical abilities related to the Pharmacy Technology program.

A criminal background check will be done on each student prior to program admission. Students will be excluded from acceptance to the program for any felony conviction record and/or any controlled substance conviction.

Continuing Eligibility Requirements:
- Program courses are sequential and complemented with appropriate support courses.
- Students must complete all first-semester courses with a grade of "C" (minimum GPA of 2.0) or better to progress to the second semester.
- Students must complete all program courses with a grade of "C" (minimum GPA of 2.0) or better in order to graduate from this program.
- Students must possess a valid high school diploma or GED by the end of the program.
- Students must be at least 18 years of age to graduate from this program.
- Students who have a felony conviction record are not allowed to continue in the program or to take the National Pharmacy Technician Certification Exam administered by the Pharmacy Technician Certification Board.

Additional requirements to be completed prior to the experience course PHT 198 include:

 - Completion of a satisfactory physical examination, taken at their own expense, and documented on the WCC health form. This form contains verification of childhood immunizations, negative TB test, and evidence of Hepatitis B vaccination or a signed waiver. Students must complete any other requirements designated by the pharmacy clinical site (i.e. required annual flu vaccine).

Program Information Report

- Students must maintain and provide proof of personal health insurance coverage.
- Demonstration of proficiency in the English language prior to placement in the experience course. Please refer to the application packet for further details.

First Semester		**(9 credits)**
HSC 101	Healthcare Terminology*	1
PHT 100	Introduction to Pharmacy and Health Care Systems	4
PHT 103	Pharmaceutical Calculations	2
PHT 145	Prescription Processing and Compounding	2

Second Semester		**(8 credits)**
PHT 101	Pharmacology for Pharmacy Technicians	4
PHT 198	Pharmacy Experience	4

Major/Area Requirements		**(14 credits)**
BIO 101	Concepts of Biology	4
CIS 100 or	Introduction to Computer Productivity Apps	
CIS 110	Introduction to Computer Information Systems	3
ENG 111	Composition I	4
MTH 167 or	Math Applications for Health Science	
MTH 169	Intermediate Algebra	3-4

Minimum Credits Required for the Program: **31**

Physical Therapist Assistant

Work with a physical therapist to provide selected services to patients with a wide variety of conditions.

Physical Therapist Assistant (APPTA)
Associate in Applied Science Degree
Program Effective Term: Fall 2013

Physical Therapist Assistants (PTAs) are skilled and licensed health care providers who work under the direction and supervision of physical therapists. PTAs perform components of physical therapy plan of care developed by a supervising physical therapist. PTAs assist physical therapists in providing services that help improve mobility, relieve pain, and prevent or limit permanent disabilities for people of all ages who have medical problems or other health-related concerns. Duties of the PTA include assisting the physical therapist in implementing treatment programs, providing interventions, and communicating with the physical therapist and other members of the health care team regarding the client's response to treatment and interventions. Clients may include accident victims, individuals with disabling conditions, and those requiring instruction in health promotion and wellness activities.

For more detailed information regarding the health care programs at WCC, please visit our "Welcome to Health Care" home page at http://www4.wccnet.edu/departments/health

Articulation:
Eastern Michigan University, BS degree.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/departments/curriculum/articulation.php?levelone=colleges.

Program Admission Requirements:
A formal application to the program is required. Application packets may be downloaded from the WCC Web site. Download the Physical Therapist Assistant program application packet: http://www4.wccnet.edu/departments/health/
Completed and signed applications must be delivered to the Health Admissions Technician at the Student Connection, located on the second floor of the Student Center Building.

Requirements for application are:
- Completion and submission of an application for admission to the Physical Therapist Assistant program.
- Academic Math Level of 3, MTH 160, MTH 167, MTH 169 or any math level 4 or higher course
- HSC 101 with a minimum grade of "C"
- ENG 111 with a minimum grade of "C"
- BIO 111 with a minimum grade of "B-" (2.7 on a 4.0 scale)
- Completion and documentation of 20 hours of observation in a physical therapy setting. A minimum of 3 hours in 3 different practice settings is required.
- Minimum cumulative GPA of 2.8 for required admission courses listed above.
- Minimum cumulative college GPA of 2.8. Only transcripts that provide an admission requirement course will be used in calculation of the cumulative GPA. If a transcript is submitted for an admission requirement course, the cumulative transcript GPA will be used in a weighted calculation of the cumulative GPA requirement.
- Applicants will undergo a criminal background check.

The following support courses may be completed prior to admission into the program: COM 101 or 102; HSC 147; MTH 160; PSY 100; PHL 244; and the Computer Literacy elective.

Continuing Eligibility Requirements:
1. This program is designed for full-time students.
2. Successful completion of all required courses with a grade of "C" or better.
3. Students are required to have additional criminal background checks and/or fingerprinting prior to the start of clinical education as requested by specific clinical facilities. Failure to receive an acceptable criminal background/fingerprinting check at any time will result in removal from the PTA program.
4. Students are required to sign an Abilities Statement verifying their ability to perform activities that are essential to the safe and competent performance of job-related activities.
5. Students are required to submit and maintain all required health records, health insurance, and valid CPR in order to progress through the program.
6. Students are required to demonstrate that they have maintained competency in all skills taught throughout their progression through the program. Failure to demonstrate continued competency will result in removal from the program.

Program Information Report

First Semester		(15 credits)
COM 101 or	Fundamentals of Speaking*	
COM 102	Interpersonal Communication*	3
HSC 147	Growth and Development*	3
PTA 100	Fundamentals of Physical Therapy	2
PTA 150	Therapeutic Procedures I	3
PTA 180	Clinical Kinesiology	4

Second Semester		(16 credits)
PSY 100	Introduction to Psychology*	3
PTA 160	Therapeutic Procedures II	2
PTA 195	Introduction to Disease	2
PTA 200	Therapeutic Modalities	4
PTA 220	Therapeutic Exercise I	4
PTA 230	Clinical Education I	1

Third Semester		(14 credits)
Elective	Computer Lit. Elective(s)*	3
PHL 244	Ethical and Legal Issues in Health Care*	3
PTA 198	Soft Tissue Management	2
PTA 225	Therapeutic Exercise II	4
PTA 240	Clinical Education II	2

Fourth Semester		(6 credits)
PTA 250	Clinical Education III	5
PTA 280	Clinical Concepts	1

Major/Area Requirements		(14 credits)
BIO 111	Anatomy and Physiology - Normal Structure and Function	5
ENG 111	Composition I	4
HSC 101	Healthcare Terminology	1
MTH 160	Basic Statistics*	4

Minimum Credits Required for the Program: **65**

Notes:

*These courses may be taken before admission to the Physical Therapist Assistant program. (It is strongly recommended that students complete the general education courses before entering the Physical Therapist Assistant program.) Students may transfer or substitute equivalent general education courses or a healthcare terminology course required for the Physical Therapist Assistant program.

Radiography

Prepare for a career as a radiographer, operating medical imaging equipment.

Radiography (APRAD)
Associate in Applied Science Degree
Program Effective Term: Fall 2013

This program prepares students for an entry-level position as a radiographer who operates medical imaging equipment and plays a vital role in healthcare delivery. This full-time, two-year program offers a diverse curriculum that includes comprehensive classroom instruction in conjunction with individualized laboratory work and extensive clinical experience in local hospitals. Upon completion of the program, the student will receive an Associate in Applied Science Degree in Radiography and is eligible to take the national registry examination administered by the American Registry of Radiologic Technologists (ARRT). Employment opportunities exist in hospitals, medical clinics, doctor's offices and industries. The program is accredited by the Joint Review Committee on Education in Radiologic Technology, 20 N. Wacker Drive, Suite 2850, Chicago, IL 60606-2901, (312)704-5300.

For more detailed information regarding the health care programs at WCC, please visit our "Welcome to Health Care" home page at http://www4.wccnet.edu/departments/health

Articulation:
Davenport University, Bachelor degree;
Eastern Michigan University, several BS degrees;
University of Michigan-Flint, BS degree.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/departments/curriculum/articulation.php?levelone=colleges.

Program Admission Requirements:
A limited number of students are admitted to the Radiography Program each year. A formal application to the program is required. Application packets may be downloaded from the WCC Web site. Download the Radiography program application packet: http://www4.wccnet.edu/departments/health/

Completed and signed applications must be delivered to the Health Admissions Technician at the Student Connection, located on the second floor of the Student Center Building. Applicants will be screened based on the following criteria:

- Completion of an application for admission to the Radiography program
- Residency status: Students who meet the WCC residency policy are admitted from Washtenaw County and surrounding counties in which the program has established clinical affiliates. Contact the Program Director for a current listing of the program clinical affiliates.

- Date of application to the Radiography Program

Note: It is the policy of Washtenaw Community College to screen its students applying to the radiography program for prior criminal convictions as a condition for admission. Individuals who have been convicted of a felony or have an abuse record may not be permitted to take the national registry examination administered by the American Registry of Radiologic Technologists (ARRT). Students with questions should contact the ARRT, (651) 687-0048, to inquire about eligibility to take the ARRT examination prior to applying for the Radiography Program.

Applicants must complete the following high school courses or equivalent WCC courses with a grade of "C" or better:

- One year of high school biology or BIO 101: Concepts of Biology
- MTH 160, MTH 167, MTH 169 or any math level 4 or higher course with a minimum grade of C+
- Completion of BIO 109 or an equivalent college-level anatomy and physiology course with a minimum grade of C+
- Completion of RAD 100, Introduction to Diagnostic Imaging with a minimum grade of B-
- Completion of HSC 101, Healthcare Terminology with a minimum grade of B-
- Applicants must have a minimum cumulative 2.3 GPA for college courses
- Admission to the Radiography program is contingent upon students declaring that they have specific physical and cognitive abilities. These requirements are detailed in the Radiography program admission packet. WCC reserves the right to request that students successfully demonstrate the specific cognitive and physical abilities related to the Radiography Program.

Post Admission Requirements:
One class is admitted each year in the spring/summer semester. Upon official notification of admission to the Radiography program, students are required to:

- Attend a mandatory Radiography Orientation Session
- Submit evidence of medical insurance
- Submit a current certification in CPR for the Professional Rescuer
- Submit documentation of a physical examination by a licensed physician or nurse practitioner

Program Information Report

- Submit immunization records
- Undergo a current criminal background check. Students whose background check reveals a criminal conviction or current criminal charge will be denied admission to the program unless the student has documentation from the AART of their eligibility to take the certification exam.

Students who fail to comply with the post admission requirements will not be permitted to register for classes and will forfeit their seat in the program.

Continuing Eligibility Requirements:
- Students must pass a physical examination, taken at their own expense, not more than three months before enrolling in the first clinical education course.
- Students must maintain personal health coverage.
- Students must be certified in CPR for the Professional Rescuer to be eligible to enroll in clinical education courses which begin in the fall semester. If they have not received certification through another agency, they can obtain it by completing HSC 131, CPR/AED for the Professional Rescuer and First Aid.
- Program courses are sequential and complemented with appropriate support courses. Students must complete all Radiography (RAD) courses with a grade of "C-" or above.
- Students must complete all general education and support courses with a grade of "C" or better.
- All students must demonstrate proficiency in the English language prior to placement in clinical courses. Please refer to the application packet for further details.

First Semester		(8 credits)
ENG 111	Composition I**	4
RAD 101	Methods in Patient Care	1
RAD 103	Medical Professionalism in Clinical Radiography	1
RAD 111	Fundamentals of Radiography	2

Second Semester		(12 credits)
COM 101	Fundamentals of Speaking**	3
RAD 110	Clinical Education	2
RAD 112	Radiographic Positioning I	2
RAD 124	Principles of Radiographic Exposure	2
RAD 125	Radiographic Procedures and Related Anatomy	3

Third Semester		(9 credits)
RAD 120	Clinical Education	2
RAD 123	Radiographic Positioning II	2
RAD 215	Radiography of the Skull	2
	Soc. Sci. Elective(s) Select PSY 100 or SOC 100**	3

Fourth Semester		(6 credits)
RAD 150	Clinical Education	3
RAD 218	Radiation Biology and Protection	3

Fifth Semester		(11 credits)
RAD 190	Physical Foundations of Radiography	3
RAD 217	Clinical Education	3
RAD 222	Pharmacology in Diagnostic Imaging	2
RAD 235	Pathology for Radiographers	3

Sixth Semester		(10 credits)
PHL 244	Ethical and Legal Issues in Health Care	3
RAD 223	Sectional Anatomy	2
RAD 225	Clinical Education	3
RAD 226	Radiographic Quality Assurance	2

Seventh Semester		(2 credits)
RAD 240	Clinical Education	2

Major/Area Requirements		(11 credits)
BIO 109	Essentials of Human Anatomy and Physiology*	4
HSC 101	Healthcare Terminology*	1
MTH 169	Intermediate Algebra*	4
RAD 100	Introduction to Diagnostic Imaging*	2

Minimum Credits Required for the Program: 69

Notes:

*These courses must be taken before being admitted to the program.
**These courses may be taken before admissions to the Radiography program. (It is strongly advised that students complete the general education courses before entering the Radiography program.) Students can transfer or substitute equivalent general education courses required for the Radiography program. Contact the program advisor for approval.

Computed Tomography (CT) (CPCTOM)
Post-Associate Certificate
Program Effective Term: Fall 2013

The Computed Tomography (CT) program is a post-associate advanced certificate program that is designed for registered radiologic technologists (ARRT), radiation therapists (ARRT), and nuclear medicine technologists (ARRT or NMTCB). This program offers the didactic and clinical experience that will provide students with the knowledge and skills that are required to become an entry-level computed tomography technologist. The curriculum is based on the recommended American Society of Radiologic Technology (ASRT) computed tomography guidelines. Upon successful completion of the Computed Tomography program, students are eligible to take the ARRT post-primary certification examination in computed tomography.

Program Admission Requirements:
The criteria for admission Admission to the Computed Tomography program:
-Registered radiologic technologist with primary certification in Radiography ARRT (R), Nuclear Medicine ARRT (N), or Radiation Therapy, ARRT (T) and Certified Nuclear Medicine Technologist, CNMT
-Graduate of a JRCERT accredited program
-Minimum GPA of 2.7
-Current CPR certification
-Completed college physical form by licensed physician
-Crime-free criminal background check
-Completion of RAD 223 Sectional Anatomy, or an equivalent course, with a grade of B- or better.

Students may download the application packet on the Health Care home page: http://www4.wccnet.edu/departments/health/

First Semester		(8 credits)
RAD 259	Introduction to Computed Tomography (CT) Instrumentation and Protocols	1
RAD 261	Patient Care in Computed Tomography (CT)	1
RAD 263	Practical Computed Tomography (CT) Imaging	3
RAD 265	Computed Tomography (CT) Clinical Education I	3

Second Semester		(8 credits)
RAD 262	Principles of Computed Tomography (CT)	2
RAD 266	Advanced Computed Tomography (CT) Imaging	3
RAD 267	Computed Tomography (CT) Clinical Education II	3

Minimum Credits Required for the Program: **16**

Mammography (CPMAM)
Post-Associate Certificate
Program Effective Term: Fall 2013

The Mammography program is a post-associate advanced certificate that is designed for ARRT registered radiologic technologists. This program prepares students to perform screening and diagnostic mammography procedures using dedicated mammography equipment. The curriculum is based on the recommended American Society of Radiologic Technology (ASRT) mammography guidelines and includes both didactic and clinical education. Upon successful completion of the Mammography program, students are eligible to take the ARRT post-primary certification examination in mammography. In an effort to accommodate working radiologic technologists, this program will be offered in a blended-format.

Program Admission Requirements:
The criteria for admission to the Mammography program:
-Current ARRT certified radiologic technologist
-Graduate of a JRCERT accredited Radiography program
-Overall GPA of 2.7
-Current CPR certification
-Crime-free criminal background check

Students may download the application packet on the Health Care home page: http://www4.wccnet.edu/departments/health/

Major/Area Requirements		(8 credits)
RAD 270	Principles of Mammography	3
RAD 271	Mammography Quality Control (QC)	3
RAD 273	Mammography Clinical Education	2

Minimum Credits Required for the Program: **8**

School of Professional Communication

We live in an age of communication. The School of Professional Communication is here to serve those who want to develop skills in radio broadcasting, technical communication, or in print and online journalism. Select one of our programs and prepare yourself for an entry-level job or for transfer to a four-year institution.

Washtenaw Community College offers programs at two levels for students who want to begin new careers, or advance in their existing careers. The first level is the certificate, which can vary from nine to thirty-six credits, depending on the field. Certificates generally prepare students for entry-level jobs.

The next level, an Associate in Arts is available for some programs. For some career fields, it is possible to earn a certificate and an Associate in Arts degree in the same field. In these cases, the credit hours from the certificate can be applied to the credit hours needed for the Associate in Arts degree.

Communication

Whether your goal is broadcasting, journalism or technical communication, these programs provide a foundation for entry-level jobs or to undertake advanced studies at a four-year institution.

Technical Communications (CTTC)
Certificate
Program Effective Term: Fall 2013

As a fast-track program for career changers or a foundational program for first time professionals, this program provides the knowledge and skills necessary for writing end-user documentation such as printed manuals and online help systems. Using the Adobe Technical Communication Suite, the student will develop skill in audience analysis; tutorial, procedure, and reference guide writing; project management; document design; and usability testing. Designed to provide the student with practical and theoretical principles of technical communication, the program prepares students for employment in a wide variety of opportunities in the field. To this end, students will also learn how to conduct a formal job search and create professional portfolios to better compete for jobs. Those without previous college experience can use this certificate to seek work as interns and in co-op positions in technical communication while pursuing the Associate in Arts Degree in Technical Communication.

Program Admission Requirements:
Basic computer literacy, a general understanding of Windows OS and Office 2000 and experience using the Internet.

Major/Area Requirements		(20 credits)
ENG 107	Technical Writing I*	3
ENG 208	Technical Writing II	3
ENG 209	Technical Writing III	3
ENG 218	Technical Writing IV	3
ENG 245	Job Search Success Seminar	2
Elective	Select one GDT course from the following: GDT 105, GDT 106, GDT 107, GDT 108	3
Elective	Select one INP course from the following: INP 140, INP 150, INP 153	3

Minimum Credits Required for the Program: **20**

Notes:

Students with equivalent coursework/experience are encouraged to contact the program advisor for appropriate course placement.

Broadcast Arts (AABCA)
Associate in Arts Degree
Program Effective Term: Fall 2013

The Broadcast Arts program provides training in radio and gives students basic knowledge of radio production, programming, and announcing. The program emphasizes communication skills needed for jobs in a variety of fields, including advertising, public relations, broadcast journalism and program production, and prepares students for transfer to a four-year institution.

Articulation:
Lawrence Technological University, BS degree.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/departments/curriculum/articulation.php?levelone=colleges.

First Semester		(16 credits)
COM 130	Introduction to Mass Communication	3
COM 155	Scriptwriting for Broadcast Arts	3
ENG 111	Composition I	4
	Soc. Sci. Elective(s)	3
	Math Elective(s)	3-4

Second Semester		(15 credits)
COM 142	Oral Interpretation of Literature	3
COM 160	Voice and Articulation	3
ENG 226	Composition II	3
	Arts/Human. Elective(s)	3
	Computer Lit. Elective(s)	3

Third Semester		(15 credits)
COM 101	Fundamentals of Speaking	3
COM 150	Introduction to Radio Production	3
COM 183 or	Persuasion	
COM 210	Nonverbal Communication	3
	Nat. Sci. Elective(s)*	3-4
	Soc. Sci. Elective(s)	3

Fourth Semester		(12 credits)
COM 170	Advanced Radio Production	3
COM 240	Broadcast Arts Internship	3
	Arts/Human. Elective(s)	3
	Elective Any 100-level or above course to reach a minimum of 60 credits.**	3

Fifth Semester		(3 credits)
COM 235	Broadcast Arts Practicum	3

Minimum Credits Required for the Program: **61**

Notes:

*Students who plan to transfer to a four-year college should select a lab-based, MACRAO approved science course.
**Additional communication courses not already used in the program are recommended.*

Program Information Report

Technical Communications (AATCD)
Associate in Arts Degree
Program Effective Term: Fall 2013

In this program, students explore the technical communication process in detail and develop skills in audience analysis, project management, technical writing and editing, document design and usability testing. Using the Adobe Technical Communication Suite, students prepare documents for both online and print delivery, learn how to conduct a formal job search, and create professional portfolios to showcase their skills in technical communication.

The Technical Communication Associate in Arts degree is designed for students transferring to a four-year university and seeking a Bachelor of Arts degree. The General Education requirements fulfill both Washtenaw Community College's requirements and the MACRAO Transfer requirements.

Articulation:
Eastern Michigan University, BA or BS degree;
Madonna University, BA degree.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet. edu/departments/curriculum/articulation.php?levelone=colleges.

Program Admission Requirements:
Students must demonstrate basic computer literacy or complete the WCC Computer Literacy Requirement prior to entering the program.

Students must have an Academic Math Level of 3 to enroll in MTH 160 or MTH 169. One year of high school algebra with a "C" or better is recommended.

First Semester		(17 credits)
COM 101	Fundamentals of Speaking	3
ENG 111	Composition I	4
	MTH 160, MTH 169 or higher level math course	4
	Computer Lit. Elective(s)	3
	Arts/Human. Elective(s)*	3

Second Semester		(16 credits)
ENG 107	Technical Writing I	3
ENG 226	Composition II	3
	GDT Elective Select one course from the following: GDT 105, GDT 106, GDT 107, GDT 108	3
	Nat. Sci. Elective(s)*	4
	Soc. Sci. Elective(s)*	3

Third Semester		(15 credits)
ENG 208	Technical Writing II	3
	Arts/Human. Elective(s)*	3
	Restricted Elective(s)**	3
	INP Elective Select one course from the following: INP 140, INP 150, INP 153	3
	Soc. Sci. Elective(s)*	3

Fourth Semester		(12 credits)
ENG 209	Technical Writing III	3
ENG 218	Technical Writing IV	3
ENG 245	Job Search Success Seminar	2
	Restricted Elective(s)**	4

Minimum Credits Required for the Program: **60**

Notes:

*If your course(s) exceeds the recommended credit hours, you will need to reduce the number of credits in the restricted electives. Students who plan to transfer to a 4-year university are encouraged to meet with the Technical Communication program advisor to select appropriate general education courses.
**Students must meet with the Technical Communication program advisor to select additional elective courses.

Program Information Report

Professional Writing

Whether your goal is journalism or technical writing, these programs provide a foundation for beginning writing or to undertake advanced studies at a four-year institution.

Journalism (AAJOUR)
Associate in Arts Degree
Program Effective Term: Fall 2013

This program prepares students to transfer to a four-year institution and major in journalism. Four specialty courses provide a solid background in journalism-related content. Students in the program will gain invaluable experience in areas of a career in journalism.

First Semester		(17 credits)
COM 130	Introduction to Mass Communication	3
ENG 111	Composition I	4
JRN 111	Introduction to Journalism	3
	Computer Lit. Elective(s)	3
	Math Elective(s)	4

Second Semester		(13 credits)
COM 101	Fundamentals of Speaking	3
ENG 226	Composition II	3
JRN 210	Introduction to Copy Editing	3
	Nat. Sci. Elective(s)*	4

Third Semester		(15 credits)
JRN 217	Feature Writing	3
	Arts/Human. 1 Elective(s)	3
	Elective(s) 1 Any 100-level or above courses	3
	Restricted Elective(s) 1 Any 100-level or above course from COM, GDT, INP, PHO, PLS or VID	3
	Soc. Sci. 1 Elective(s)	3

Fourth Semester		(15 credits)
JRN 220	Introduction to Digital Journalism	3
	Arts/Human. 2 Elective(s)	3
	Elective(s) 2 Any 100-level or above course to bring the total credits to a minimum of 60.	3
	Restricted Elective(s) Any 100-level or above course from COM, GDT, INP, PHO, PLS or VID	3
	Soc. Sci. 2 Elective(s)	3

Minimum Credits Required for the Program: **60**

Notes:

Transfer students should select a lab-based, MACRAO-approved science course.

Program Information Report

Transfer and University Parallel Programs

If your goal is to continue your education toward a baccalaureate degree, then transfer and university parallel programs is the track for you. Complete the first two years of study in a supportive environment with small classes and personal attention.

Business (AABAS)
Computer Science: Programming in Java (ASCSPJ) See School of Information Technology
Criminal Justice (AACJ)
Education, Early Childhood (AAECE)
Education, Elementary (AAELEM)
Education, Secondary (AASECO)
Environmental Science (ASENVS)
   1. Environmental Science (ENV1)
   2. Environmental Science and Society (ENV2)
Exercise Science (ASESCI)
General Studies in Math and Natural Sciences (ASGSMS)
Human Services (AAHUST)
Information Systems: Programming in C++ (ASISPC) See School of Information Technology
Liberal Arts Transfer (AALAT)
Math and Science (ASMSAS)
   1. Pre-Medicine Concentration (BMED or CMED)
   2. Computer Science Concentration (COMS)
   3. Mathematics Concentration (MATH)
   4. Physics/Pre-Engineering Concentration (PHYS)

Before beginning any transfer program, a student should consult with an academic advisor or counselor to obtain a program articulation agreement, or a transfer guide. Early in the program, the student should contact an undergraduate advisor at the transfer college for specific admission and curriculum requirements and, if available, an unofficial transfer-credit evaluation.

Copies of articulation agreements and transfer guides are available in the Counseling Office on the second floor of the Student Center Building. Computers with access to the Internet Web sites of four-year colleges and universities are also available there.

Apprenticeship and Occupational Studies

These individualized programs utilize earned certificates, apprenticeships and trade-related credits tailored to the needs of the student. The Occupational Studies degree offers the flexibility to combine certain certificate programs with general education courses and electives to develop an individualized Associate in Applied Science degree.

Program Information Report

Occupational Studies/EMU Technology Management BS (TR01O1OST)
Associate Degree/3+1 Transfer
Program Effective Term: **Fall 2013**

The Technology Management program is designed for transfer students with an associate of applied science degree. The interdisciplinary curriculum provides the necessary foundation to meet the changing needs of management in a variety of fields. Check with an advisor for information on transferring.

Articulation:
EMU Technology Management BS

www.wccnet.edu/departments/curriculum/articulation.php?levelone=colleges

Requirements	(94 credits)
Complete a maximum of ninety-four credits at Washtenaw Community College as outlined on the Articulation Agreement. See the articulation for suggested occupational areas.	94
Complete a minimum of thirty credits at EMU as outlined on the Articulation Agreement.	0

Minimum Credits Required for the Program: **94**

Business Transfer
Designed for students who intent to transfer into a four-year school program in business.

Business (AABAS)
Associate in Arts Degree
Program Effective Term: Fall 2013

This program prepares students for transfer to a bachelor's of business administration degree program at a four-year college or university, where they will further improve their communication and interpersonal skills while developing a specialty in accounting, economics, finance, management, or some other aspect of business. The program was specifically designed to transfer to Eastern Michigan University. Check with an advisor for information on transferring to other colleges. See the footnotes for transferring to the University of Michigan.

Articulation:
Cleary University, BS or BBA degree;
Davenport University, Bachelor degree;
Eastern Michigan University, BBA degree*;
Ferris State University, BS degree;
Kaplan University, BS degree;
Madonna University, BS degree;
Northwood University, BBA degree;
University of Michigan-Flint, BA degree;
Walsh College, BA or BBA degree.

*A minimum cumulative GPA of 2.5 is required for admission to EMU's College of Business. All courses must be completed with a minimum grade of "C" (2.0) to transfer. Contact the College of Business Undergraduate Advising Office at EMU early to have transfer credits reviewed and unofficially evaluated. (734-487-2344 or email cob_undergraduate@emich.edu)

This program meets MACRAO. Students must have their transcripts certified for MACRAO completion by the WCC Student Records Office.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/departments/curriculum/articulation.php?levelone=colleges.

Program Admission Requirements:
Students must have:
- Academic Math Level of 2 to enroll in MTH 125
- Academic Math Level of 3 to enroll in MTH 160
- Academic Math Level of 4 to enroll in MTH 176 or MTH 181

First Semester		(17 credits)
ACC 111	Principles of Accounting I	3
BMG 140	Introduction to Business	3
CIS 110	Introduction to Computer Information Systems	3
ENG 111	Composition I	4
MTH 125 or	Everyday College Math	
MTH 160 or	Basic Statistics	
MTH 176 or	College Algebra	
MTH 181	Mathematical Analysis I	4

Second Semester		(16 credits)
ACC 122	Principles of Accounting II	3
BMG 207	Business Communication	3
ENG 226	Composition II	3
	Nat. Sci. Elective(s)**	4
	Soc. Sci. Elective(s)	3

Third Semester		(15 credits)
BMG 111	Business Law I	3
BMG 265	Business Statistics	3
COM 101	Fundamentals of Speaking	3
ECO 211	Principles of Economics I	3
	Soc. Sci. Elective(s)	3

Program Information Report

Fourth Semester	**(12 credits)**
ECO 222	Principles of Economics II	3
	Elective Complete one course as a free elective to bring the program total to a minimum of 60 credits.****	3
	Arts/Human. 1 Elective(s)***	3
	Arts/Human. 2 Elective(s)***	3

Minimum Credits Required for the Program: **60**

Notes:

*Students transferring to a four-year institution should choose a lab-based, MACRAO-approved science course.
**See the MACRAO list to make course selections from any discipline except ECO.
***See the EMU Diverse World Requirement list. A course in logic or ethics (PHL 205 or PHL 250) is strongly recommended.
 ****See an advisor to choose courses that transfer to and meet the requirements of the program and college to which you are transferring.*

University of Michigan School of Business does not accept business or accounting courses from community colleges. If you wish to transfer to a business major at UM, please see a counselor.

Program Information Report

Business/Davenport Business Professional Studies BBA (TR02B1BAS)
Associate Degree/3+1 Transfer
Program Effective Term: **Fall 2013**

This program prepares students for transfer to a bachelor's of business administration degree program at Davenport University, where they will further improve their communication and interpersonal skills while developing a specialty in accounting, economics, finance, management, or some other aspect of business. Check with an advisor for information on transferring.

Articulation:
Davenport University

http://www.wccnet.edu/departments/curriculum/articulation.php?levelone=colleges

Requirements	(86 credits)
Complete a maximum of eighty-six credits at Washtenaw Community College as outlined on the Articulation Agreement.	86
Complete a minimum of thirty-four credits at Davenport University as outlined on the Articulation Agreement.	

Minimum Credits Required for the Program: **86**

Business/EMU Bachelor of Business Administration BBA (TR01B1BAS)
Associate Degree/3+1 Transfer
Program Effective Term: Fall 2013

This program prepares students for transfer to a bachelor's of business administration degree program at a Eastern Michigan University, where they will further improve their communication and interpersonal skills while developing a specialty in accounting, economics, finance, management, or some other aspect of business. Check with an advisor for information on transferring.

Articulation:
EMU Business Major (approved) BBA

http://www.wccnet.edu/departments/curriculum/articulation.php?levelone=colleges

Requirements	(82 credits)
Complete a maximum of eighty-two credits at Washtenaw Community College as outlined on the Articulation Agreement.	82
Complete a minimum of forty-two credits at EMU as outlined on the Articulation Agreement.	

Minimum Credits Required for the Program: **82**

Program Information Report

Business/Northwood Management BBA (TR04B1BAS)
Associate Degree/3+1 Transfer
Program Effective Term: Fall 2013

This program prepares students for transfer to a bachelor's of business administration degree program at Northwood University, where they will further improve their communication and interpersonal skills while developing a specialty in accounting, economics, finance, management, or some other aspect of business. Check with an advisor for information on transferring.

Articulation:
Northwood University Business Admin

http://www.wccnet.edu/departments/curriculum/articulation.php?levelone=colleges

Requirements	(92 credits)
Complete a maximum of ninety-two credits at Washtenaw Community College as outlined on the Articulation Agreement.	92
Complete a minimum of thirty-one credits at Northwood University as outlined on the Articulation Agreement.	

Minimum Credits Required for the Program: **92**

Computer Science and Information Systems

Interested in a bachelor's degree in computer science or (business) information systems? This area provides the foundation you need to be successful.

Computer Science: Programming in Java (ASCSPJ)
Associate in Science Degree
Program Effective Term: **Fall 2013**

This program prepares students to transfer to Eastern Michigan University to complete a bachelor's degree in Computer Science or Applied Computer Science and to pursue careers in computer science fields such as computer systems programming and analysis, software development and maintenance, and applications programming.

Articulation:
Eastern Michigan University, BS degree;
Kaplan University, BS degree.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/departments/curriculum/articulation.php?levelone=colleges.

Program Admission Requirements:
Students need an Academic Math Level of 4 or higher to enroll in MTH 176.

First Semester		(14 credits)
CPS 161	An Introduction to Programming with Java	4
Elective	MTH 176 or higher 4 credit math course	4
	Arts/Human. 1 Elective(s)	3
	Computer Lit. Elective(s)	3

Second Semester		(15 credits)
ENG 111	Composition I	4
CPS 261	Advanced Java Concepts	4
CPS 276	Web Programming Using Apache, MySQL, and PHP	4
	Soc. Sci. 1 Elective(s)***	3

Third Semester		(17 credits)
COM 225	Intercultural Communication*	3
CPS 278	Java Server Programming	4
	Nat. Sci. Elective(s)**	4
	Soc. Sci. 2 Elective(s)***	3
Elective	Students must complete 100-level or above transferrable courses to reach a minimum of 60 credits. Possible CIS/CPS electives include: CIS 121, CIS 282, CPS 171, CPS 255, CPS 271 or CPS 272.	3

Fourth Semester		(16 credits)
CPS 251	Android Programming Using Java	4
ENG 226	Composition II	3
	Arts/Human. 2 Elective(s)	3
	Soc. Sci. 3 Elective(s)***	3
Elective	Students must complete 100-level or above transferrable courses to reach a minimum of 60 credits. Possible CIS/CPS electives include: CIS 121, CIS 282, CPS 171, CPS 255, CPS 271 or CPS 272.	3-12

Minimum Credits Required for the Program: **62**

Notes:

Satisfies EMU's Diverse World Requirement.
**Students transferring to a four-year institution should choose a lab-based, MACRAO-approved science course.*
***Choose three courses from at least two disciplines.*

See an advisor to choose courses that meet the requirements of the program to which you are transferring.

Program Information Report

Information Systems: Programming in C++ (ASISPC)
Associate in Science Degree
Program Effective Term: Fall 2013

This program prepares students to transfer to complete a bachelor's degree in Business Administration with a major in Computer Information Systems. Undergraduates and graduates of CIS programs are prepared to create and maintain information systems for organizations, manage information systems projects, and develop strategies for effective use of enterprise information resources.

Articulation:
Eastern Michigan University, several BS degrees.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site:
http://www.wccnet.edu/departments/curriculum/articulation.php?levelone=colleges.

Program Admission Requirements:
Students need an Academic Math Level of 4 to enroll in MTH 176.

First Semester		(14 credits)
COM 225	Intercultural Communication*	3
CPS 171	Introduction to Programming with C++	4
ENG 111	Composition I	4
	Computer Lit. Elective(s)	3

Second Semester		(17 credits)
CIS 121	Linux/UNIX I: Fundamentals	3
CPS 271	Object Features of C++	4
ENG 226	Composition II	3
	MTH 176 or higher 4 credit math course	4
	Arts/Human. 1 Elective(s)	3

Third Semester		(15 credits)
CPS 276	Web Programming Using Apache, MySQL, and PHP	4
	Nat. Sci. Elective(s)**	4
	Soc. Sci. 1 Elective(s)***	3
	Electives Students must complete 100-level or above transferrable courses to reach a minimum of 60 credits. Possible CIS/CPS electives include: CIS 282, CPS 161, CPS 251, CPS 255, CPS 261, CPS 278	4

Fourth Semester		(17 credits)
CPS 272	Data Structures with C++	4
	Arts/Human. 2 Elective(s)	3
	Soc. Sci. 2 Elective(s)***	3
	Soc. Sci. 3 Elective(s)***	3
	Electives Students must complete 100-level or above transferrable courses to reach a minimum of 60 credits. Possible CIS/CPS electives include: CIS 282, CPS 161, CPS 251, CPS 255, CPS 261, CPS 278	4

Minimum Credits Required for the Program: **63**

Notes:

*Satisfies EMU's Diverse World Requirement
**Students transferring to a four-year institution should choose a lab-based, MACRAO-approved science course.
See an advisor to choose courses that meet the requirements of the program to which you are transferring.
***Choose three courses from at least two disciplines.

This course sequencing aligns with students starting in the Fall semester. Students starting the Winter semester should switch the order in which they take CPS 272 and CPS 276.

Program Information Report

Computer Sci: Prog in Java/Davenport Computer Info. Systems: Programming BS (TR02C1CSPJ)
Associate Degree/3+1 Transfer
Program Effective Term: **Fall 2013**

This program is designed for transfer to Davenport University. Students can obtain a Bachelor of Science degree in Computer Information Systems. Students will develop a broad range of computer programming skills. Students will learn to work with corporate management and subject matter experts to analyze information needs and determine ways in which computer systems can be used to meet those needs. Check with an advisor for information on transferring.

Articulation:
Davenport University

www.wccnet.edu/departments/curriculum/articulation.php?levelone=colleges

Requirements	(64 credits)
Complete a maximum of sixty-four credits at Washtenaw Community College as outlined on the Articulation Agreement.	64
Complete a minimum of sixty-nine credits at Davenport University as outlined on the Articulation Agreement.	0

Minimum Credits Required for the Program: **64**

Computer Science: Program in Java/EMU Computer Science BS (TR01C4CSPJ)
Associate Degree/3+1 Transfer
Program Effective Term: **Fall 2013**

This program prepares students to transfer to Eastern Michigan University to complete a bachelor's degree in Computer Science or Applied Computer Science and to pursue careers in computer science fields such as computer systems programming and analysis, software development and maintenance, and applications programming.

Articulation:
Eastern Michigan University, BS degree;

www.wccnet.edu/departments/curriculum/articulation.php?levelone=colleges.

Info. Systems: Prog in C++/Davenport Computer Info. Systems: Programming BS (TR02I1ISPC)
Associate Degree/3+1 Transfer
Program Effective Term: Fall 2013

This program is designed for transfer to Davenport University. Students can obtain a Bachelor of Science degree in Computer Information Systems. Students will develop a broad range of computer programming skills. Students will learn to work with corporate management and subject matter experts to analyze information needs and determine ways in which computer systems can be used to meet those needs. Check with an advisor for information on transferring.

Articulation:
Davenport University

www.wccnet.edu/departments/curriculum/articulation.php?levelone=colleges

Requirements	(60 credits)
Complete a maximum of sixty credits at Washtenaw Community College as outlined on the Articulation Agreement.	60
Complete a minimum of seventy-five credits at Davenport University as outlined on the Articulation Agreement.	0

Minimum Credits Required for the Program: **60**

Information Systems: Program in C++/EMU Computer Information Systems BBA (TR01I1ISPC)
Associate Degree/3+1 Transfer
Program Effective Term: Fall 2013

This program prepares students to transfer to EMU to complete a BBA degree in Computer Information Systems. Undergraduates and graduates of CIS programs are prepared to create and maintain information systems for organizations, manage information systems projects, and develop strategies for effective use of enterprise information resources. Check with an advisor for information on transferring.

Articulation:
EMU Computer Information Systems BBA

www.wccnet.edu/departments/curriculum/articulation.php?levelone=colleges.

Requirements	(82 credits)
Complete a maximum of eighty-two credits at Washtenaw Community College as outlined on the Articulation Agreement.	82
Complete a minimum of forty-two credits at Eastern Michigan University as outlined on the Articulation Agreement.	0

Minimum Credits Required for the Program: **82**

Computer Security

Computer Systems Security/EMU Information Assurance BS (TR01C5CSS)
Associate Degree/3+1 Transfer
Program Effective Term: **Fall 2013**

This program prepares students to transfer to a bachelor of science program in Information Assurance. Students will learn about the latest security technologies and will examine the issues of IT security awareness, data confidentiality, systems and network security planning, network security organization, and the legal and ethical issues associated with computer systems security. Students will also execute a vulnerability analysis of a network and will design security systems and implement a security strategy for a network.

Articulation:
EMU Information Assurance BS

www.wccnet.edu/departments/curriculum/articulation.php?levelone=colleges.

Requirements	(91 credits)
Complete a maximum of ninety-one credits at Washtenaw Community College as outlined on the Articulation Agreement.	91
Complete a minimum of thirty-three credits at Eastern Michigan University as outlined on the Articulation Agreement.	0

Minimum Credits Required for the Program: **91**

Criminal Justice
Considering a career in the justice system? This program prepares you for further study in this specialized field.

Criminal Justice (AACJ)
Associate in Arts Degree
Program Effective Term: Fall 2013

This program helps prepare students for jobs in the courts and in corrections (such as probation and parole) as well as state and federal law enforcement. Most, but not all, of these jobs require at least a bachelor's degree and students can complete their first 3 years at WCC before transferring to other four-year schools such as EMU for their final year.

Articulation:
Davenport University, Bachelor degree;
Eastern Michigan University, BA degree and several BS degrees*;
Kaplan University, BS degree.

*For those interested in pursuing a degree in Criminology and Criminal Justice from EMU, students may take 30 additional credit hours at WCC and transfer a total of 94 credits to EMU towards a Bachelor's Degree (124 hours). The following additional classes are recommended: ANT 201, SOC 207, SOC 250, and PSY 257.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/departments/curriculum/articulation.php?levelone=colleges.

Program Admission Requirements:
Students must have an Academic Math Level of 3 to enroll in MTH 160. One year of high school algebra is recommended.

First Semester		(16 credits)
CJT 100	Introduction to Criminal Justice	3
CJT 111	Police/Community Relations	3
COM 102	Interpersonal Communication	3
ENG 111	Composition I	4
	Arts/Human. Elective(s)*	3

Second Semester		(16 credits)
CJT 120	Criminal Justice Ethics	3
CJT 154 or	Everyday Law: Law and Civil Liberties	
CJT 160	Criminal Justice Constitutional Law	3
CJT 209	Criminal Law	3
ENG 226	Composition II	3
MTH 160	Basic Statistics	4

Third Semester		(16 credits)
CJT 208	Criminal Evidence and Procedure	3
CJT 223	Juvenile Justice	3
PSY 100	Introduction to Psychology	3
	Computer Lit. Elective(s)	3
	Nat. Sci. Elective(s)*	4

Fourth Semester		(15 credits)
CJT 224	Criminal Investigation	3
CJT 170 or	Domestic and International Terrorism	
CJT 225	Seminar in Criminal Justice	3
PLS 112	Introduction to American Government	3
SOC 100	Principles of Sociology	3
	Arts/Human. Elective(s)*	3

Minimum Credits Required for the Program: **63**

Notes:

See the MACRAO list to make course selections. Transfer students should a select lab-based Natural Science course.

Program Information Report

Criminal Justice/EMU Criminology and Criminal Justice BS (TR01C1CJ)
Associate Degree/3+1 Transfer
Program Effective Term:　　**Fall 2013**

This program helps prepare students for jobs in the courts and in corrections (such as probation and parole) as well as state and federal law enforcement. Most, but not all, of these jobs require at least a bachelor's degree and students can complete their first three years at WCC before transferring to Eastern Michigan University.

Articulation:
EMU Criminology and Criminal Justice BS

http://www.wccnet.edu/departments/curriculum/articulation.php?levelone=colleges

Requirements	(94 credits)
Complete a maximum of ninety-four credits at Washtenaw Community College as outlined on the Articulation Agreement.	94
Complete a minimum of thirty credits at Eastern Michigan University as outlined on the Articulation Agreement.	

Minimum Credits Required for the Program: **94**

Criminal Justice/EMU Public Safety Administration BS (TR01C2CJ)
Associate Degree/3+1 Transfer
Program Effective Term: Fall 2013

This program helps prepare students for jobs in the courts and in corrections (such as probation and parole) as well as state and federal law enforcement. Most, but not all, of these jobs require at least a bachelor's degree and students can complete their first three years at WCC before transferring Eastern Michigan University.

Articulation:
EMU Public Safety Administration BS

http://www.wccnet.edu/departments/curriculum/articulation.php?levelone=colleges

Requirements	(94 credits)
Complete a maximum of ninety-four credits at Washtenaw Community College as outlined on the Articulation Agreement.	94
Complete a minimum of thirty credits at Eastern Michigan University as outlined on the Articulation Agreement.	

Minimum Credits Required for the Program: **94**

Criminal Justice/EMU Technology Management BS (TR01C3CJ)
Associate Degree/3+1 Transfer
Program Effective Term: **Fall 2013**

The technology management program is designed for transfer students with an associate of applied science degree. The interdisciplinary curriculum provides the necessary foundation to meet the changing needs of management in a variety of fields including criminal justice. Check with an advisor for information on transferring.

Articulation:
EMU Technology Management BS

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site:
http://www.wccnet.edu/departments/curriculum/articulation.php?levelone=colleges

Requirements	(94 credits)
Complete a maximum of ninety-four credits at Washtenaw Community College as outlined on the Articulation Agreement.	94
Complete a minimum of thirty credits at Eastern Michigan University as outlined on the Articulation Agreement.	

Minimum Credits Required for the Program: **94**

Education
These programs offer the first two years of instruction required to become a certified teacher in the state of Michigan.

Program Information Report

Early Childhood Education (AAECED)
Associate in Arts Degree
Program Effective Term: **Fall 2013**

The program prepares students to transfer into an early childhood education program at a four-year college or university. The first two years of instruction in a bachelor's degree program in an early childhood education major is covered. The program includes the general education courses that prepare students for the state-mandated basic skills tests for teachers in the State of Michigan. Requirements vary by college, so students should obtain the current curriculum for the college to which they are transferring.

Program Admission Requirements:
Academic Math Level of 3 is required to enroll in MTH 148.

Continuing Eligibility Requirements:
GPA of 2.0 or higher

First Semester		(16 credits)
CCP 101	Child Development	3
COM 101	Fundamentals of Speaking	3
ENG 111	Composition I	4
GEO 101	World Regional Geography	3
PSY 100	Introduction to Psychology	3

Second Semester		(16 credits)
CCP 220	Development and Care of Infants and Toddlers	3
CCP 251 or	Education of Exceptional Children	
PSY 251	Education of Exceptional Children	3
CIS 100	Introduction to Computer Productivity Apps	3
ENG 226	Composition II	3
MTH 148	Functional Math for Elementary Teachers I	4

Third Semester		(15 credits)
ENG 240	Children's Literature	3
HSC 131	CPR/AED for the Professional Rescuer and First Aid	1
HST 201	United States History to 1877	3
MTH 149	Functional Math for Elementary Teachers II	4
CEM 102 or	Chemistry for Elementary Teachers*	
GLG 202 or	Earth Science for Elementary Teachers*	
PHY 100	Physics for Elementary Teachers*	4

Fourth Semester		(13 credits)
CCP 200	Working with Families in a Diverse Society	3
CCP 204	The Developing Professional in Early Childhood Education	2
CCP 205	Practicum for the Developing ECE Professional	1
PSY 220	Human Development and Learning	4
	Arts/Human. Elective(s)	3
	Elective Science for Elementary School Teachers (optional)*	0-4

Minimum Credits Required for the Program: **60**

Notes:

All three could be taken at WCC to transfer to EMU: CEM 102, GLG 202 and PHY 100.

Elementary Education (AAELEM)
Associate in Arts Degree
Program Effective Term: Fall 2013

This program prepares students to transfer into an elementary education program at a four-year college or university. The first two years of instruction in a bachelor's degree program in elementary education is covered. The program includes the general education courses used for most elementary education programs in Michigan, that prepare students for the state-mandated basic skills tests. Requirements may vary among colleges so students should obtain the current curriculum from the college to which they are transferring and talk to an undergraduate advisor early in their studies. Curriculum and admission requirements are available on most colleges' Web sites.

Articulation:
Ferris State University, BS degree;
Eastern Michigan University, BS degree.

This program meets MACRAO. Students must have their transcripts certified for MACRAO completion by the WCC Student Records Office.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/departments/curriculum/articulation.php?levelone=colleges.

Program Admission Requirements:
Students must have an Academic Math Level of 3 to enroll in MTH 148. At least one year of high school algebra is recommended.

Continuing Eligibility Requirements:
Admission requirements for bachelor's degree teacher education programs may vary among colleges. Most require a minimum grade point average of 2.0 for courses to transfer as well as a minimum of 56 to 60 college credits completed and successful completion of the state-mandated basic skills test before applying for admission to the program.

First Semester		(16 credits)
COM 101	Fundamentals of Speaking	3
ENG 111	Composition I	4
GEO 101	World Regional Geography	3
PLS 112	Introduction to American Government	3
Elective	Complete an Arts/Human. elective*	3

Second Semester		(17 credits)
ENG 226	Composition II	3
GLG 202	Earth Science for Elementary Teachers	4
MTH 148	Functional Math for Elementary Teachers I	4
PSY 100	Introduction to Psychology	3
Elective	Complete one course from the following: ENG 181, ENG 214, or ENG 242	3

Third Semester		(15 credits)
ENG 240	Children's Literature	3
PSY 251	Education of Exceptional Children	3
CIS 100 or	Introduction to Computer Productivity Apps	
CIS 110	Introduction to Computer Information Systems	3
Elective	Complete a minimum of 6 credits in your major or minor area (e.g. language arts, math, science, social studies, etc.)**	6

Fourth Semester		(15 credits)
HST 201	United States History to 1877	3
MTH 149	Functional Math for Elementary Teachers II	4
PHY 100	Physics for Elementary Teachers	4
PSY 220	Human Development and Learning	4

Minimum Credits Required for the Program: 63

Notes:

*For CMU select MUS 180.
**See an advisor to select a course that will meet the requirements of the college to which you are transferring.

Program Information Report

Secondary Education (AASECO)
Associate in Arts Degree
Program Effective Term: Fall 2013

This program prepares students for transfer into a bachelor's degree program in secondary education at a four-year college or university. The program covers the first two years of instruction, including the general education courses, used by most secondary education programs in Michigan, which prepare students for the state-mandated basic skills tests. Requirements may vary among colleges. Students should obtain the current curriculum from the college to which they are transferring and talk to an undergraduate advisor early in their studies. Curriculum and admission requirements are available on most colleges' Web sites.

Articulation:
Eastern Michigan University, BS degree.

This program meets MACRAO. Students must have their transcripts certified for MACRAO completion by the WCC Student Records Office.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/departments/curriculum/articulation.php?levelone=colleges.

Program Admission Requirements:
Students must have an Academic Math Level of 2 to enroll in MTH 125.

Continuing Eligibility Requirements:
Admission requirements for bachelor's degree teacher education programs may vary among colleges. Most require a minimum grade point average of 2.0 for courses to transfer as well as a minimum of 56 to 60 college credits completed and successful completion of the state-mandated basic skills test before applying for admission to the program.

First Semester		(16 credits)
CIS 100 or	Introduction to Computer Productivity Apps	
CIS 110	Introduction to Computer Information Systems	3
COM 101	Fundamentals of Speaking	3
ENG 111	Composition I	4
PLS 112	Introduction to American Government	3
ENG 181 or	African-American Literature	
ENG 214 or	Literature of the Non-Western World	
ENG 242	Multicultural Literature for Youth	3

Second Semester		(16 credits)
ENG 226	Composition II	3
PSY 100	Introduction to Psychology	3
Elective	Complete one course from: ARB 111, ARB 122, ENG 160, ENG 170, ENG 211, ENG 212, ENG 213, ENG 222, ENG 223, ENG 224, FRN 111, FRN 122, FRN 213, FRN 224, GRM 111, GRM 122, SPN 111, SPN 122, SPN 201, or SPN 202	3-5
Elective	Complete one course from: MTH 125, MTH 160, MTH 169, MTH 176, MTH 181, MTH 182, MTH 191 or MTH 197	4-5
Elective	Complete a minimum of 3 credits in a major or minor area.*	3

Third Semester		(17 credits)
PSY 251	Education of Exceptional Children	3
Elective	Complete one course from: BIO 101, BIO 102, CEM 105, CEM 111, GLG 100, GLG 114, PHY 105, or PHY 111	4
Elective	Complete one course from: HST 121, HST 122, HST 123, HST 201, or HST 202	3
Elective	Complete a minimum of 7 credits in a major or minor area.*	7

Fourth Semester		(11 credits)
PSY 220	Human Development and Learning	4
Elective	Complete a minimum of 7 credits in a major or minor area.*	7

Minimum Credits Required for the Program: **60**

Notes:

*See an advisor to select courses that will meet the requirements of the college to which you are transferring.

Program Information Report

Exercise Science

This program prepares the student for further study in the area of exercise science.

Exercise Science (ASESCI)
Associate in Science Degree
Program Effective Term: Fall 2013

The Exercise Science program is designed to prepare students for employment at the entry level in health and fitness-related occupations and/or for higher education by training in the sciences that relate to physical activity, health, fitness, nutrition, wellness, and weight control. Completion of the two-year degree will prepare students for the ACSM certification exams for personal trainer and/or health/fitness instructor. The AS degree in Exercise Science from WCC is designed to prepare students for transfer to a four-year institution that offers degrees in sports medicine-exercise science, kinesiology, movement science, and physical education. Individuals that transfer to four-year institutions in these fields (and in some cases go beyond the four-year degree) can be expected to find employment in a wide variety of occupations, including (but not limited to) physician, physician's assistant, physical therapist, physical therapist assistant, research scientist, fitness manager, worksite wellness coordinator, exercise specialist, clinical exercise physiologist, coach, physical education teacher, and other exercise-related positions.

Articulation:
Eastern Michigan University, several BS degrees.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/departments/curriculum/articulation.php?levelone=colleges.

First Semester		(18 credits)
BIO 162	General Biology II Cells and Molecules	4
ENG 111	Composition I	4
MTH 160	Basic Statistics	4
MTH 178	General Trigonometry**	3
PSY 100	Introduction to Psychology	3

Second Semester		(18 credits)
BIO 110	Introduction to Exercise Science	3
BIO 161	General Biology I Ecology and Evolution	4
CEM 111	General Chemistry I	4
ENG 226	Composition II	3
PHY 111	General Physics I	4

Third Semester		(18 credits)
BIO 111	Anatomy and Physiology - Normal Structure and Function	5
BIO 201	Physiology of Exercise	4
	Arts/Human. 1 Elective(s)	3
	Computer Lit. Elective(s)	3
	Soc. Sci. Elective(s)*	3

Fourth Semester		(17 credits)
BIO 215	Cell and Molecular Biology	4
BIO 225	Tests and Measurements in Exercise Science	3
HSC 131	CPR/AED for the Professional Rescuer and First Aid	1
	Arts/Human. 2 Elective(s)	3
	Soc. Sci. Elective(s)*	3
	Speech Elective(s)	3

Minimum Credits Required for the Program: **71**

Notes:

*Transfer students should select two MACRAO-approved Social Science courses.
**Students must have an Academic Math Level of 4 to enroll in MTH 178.

Graphic Design

From the foundations of visual communication through production techniques, this field allows you to utilize your creative and artistic abilities.

Program Information Report

Graphic Design/College for Creative Studies Commun Desgn-Graphic Design BFA (TR06G1GRD)
Associate Degree/3+1 Transfer
Program Effective Term: **Fall 2013**

This program prepares students for a career as a graphic designer. Graphic designers work with writers, publishers, photographers, printers, and other specialists in the field of visual communication design to communicate, inform, instruct, or sell. Students may work on publications, advertising, or the Internet. The program focuses on developing skills in basic design theory, concept development, typography, the major graphic design software, and knowledge of production techniques for print and electronic media as exhibited in a portfolio. Creative and artistic ability is required for careers in graphic design, as well as originality and capacity for experimentation in visual problem-solving. Students also need an aptitude for developing strong skills with desktop computers and graphics software programs. This program prepares students for transferring to the College for Creative Studies.

Articulation:
CCS Commun Design - Graphic Design BFA

www.wccnet.edu/departments/curriculum/articulation.php?levelone=colleges

Requirements	(93 credits)
Complete a maximum of ninety-three at Washtenaw Community College as outlined on the Articulation Agreement.	93
Complete a minimum of forty-five credits at College for Creative Studies as outlined on the Articulation Agreement.	0

Minimum Credits Required for the Program: **93**

Graphic Design/EMU Applied Technology BS (TR01A1GRD)
Associate Degree/3+1 Transfer
Program Effective Term: **Fall 2013**

The applied technology major is designed to serve those individuals who wish to continue their technology-related community college education. The program offers the flexibility of accepting a block of up to 34 credits of technical courses as transfer credit. Articulation agreements have been established with several community colleges to ensure the maximum transfer of credits. Students transferring from other four year higher education institutions with a technical major may also find this major suitable. Check with an advisor for information on transferring.

Graphic Design majors should see GDT faculty for academic advisors according to the first letter of their last name: Ingrid Ankerson (A-M) Kristine Willimann (N-Z).

Articulation:
EMU Applied Technology BS

www.wccnet.edu/departments/curriculum/articulation.php?levelone=colleges.

Requirements	(94 credits)
Complete a maximum of ninety-four credits at Washtenaw Community College as outlined on the Articulation Agreement.	94
Complete a minimum of thirty credits at Eastern Michigan University as outlined on the Articulation Agreement.	

Minimum Credits Required for the Program: **94**

Liberal Arts Transfer
This program of study can be individualized to meet your needs or the requirements of the transfer college or university.

Film Studies (AAFS)
Associate in Arts Degree
Program Effective Term: Fall 2013

In this program, students will be introduced to film as a medium of artistic expression and persuasion. Students will critically study motion pictures covering a variety of eras, cultures and genres. They will be introduced to the various elements of the creative process involved in film making such as narrative, acting, mise-en-scene, editing, cinematography and sound. Students will develop the skills necessary to critically and technically evaluate one of the most dynamic and influential art forms of the past 100 years.

First Semester		(17 credits)
COM 130	Introduction to Mass Communication	3
HUM 120	Introduction to Film	3
	Math Elective(s)	4
	Soc. Sci. Elective(s)	3
	Writing Elective(s)	4

Second Semester		(15 credits)
HUM 160	American Film	3
	Computer Lit. Elective(s)	3
	Speech Elective(s)	3
	Writing Elective(s)	3
	Select one of the following courses: COM 150, ENG 115 or VID 105.*	3-4

Third Semester		(13 credits)
HUM 150 or	International Cinema	
HUM 185	The Horror Film	3
	Nat. Sci. Elective(s)	4
	Soc. Sci. Elective(s)	3
	Select one of the following courses: COM 150, ENG 115 or VID 105.*	3-4

Fourth Semester		(15 credits)
HUM 220	Great Directors	3
HUM 221	Film and Representation	3
	Open electives to reach a minimum of 60 credits	9-10

Minimum Credits Required for the Program: **60**

Notes:

Do not select the same course twice.

Global Studies (AAGS)
Associate in Arts Degree
Program Effective Term: Fall 2013

Associate of Arts Liberal Arts Transfer in Global Studies will aid students in the development of an open, inclusive, international perspective through the study of human cultures, history, and language. This degree will provide students with the basic international and intercultural understanding that is applicable in the university and in the workplace, as well as prepare them for entry into a degree program at a four-year academic institution.

First Semester		(16 credits)
ART 150	Monuments and Cultures	3
ENG 111	Composition I	4
	Foreign Language*	5
	Math Elective(s)	4

Second Semester		(15 credits)
ENG 226	Composition II	3
GEO 101	World Regional Geography	3
	Foreign Language*	5
	Nat. Sci. Elective(s)	4

Third Semester		(15 credits)
	Arts/Human. Elective(s)	3
COM 225	Intercultural Communication	3
	Computer Lit. Elective(s)	3
	Global Studies Elective(s)**	3
	Soc. Sci. Elective(s)	3

Fourth Semester		(15 credits)
ANT 201	Introduction to Cultural Anthropology	3
	Arts/Human. Elective(s)	3
	Global Studies Elective(s)**	3
	Global Studies Elective(s)**	3
	Soc. Sci. Elective(s)	3

Minimum Credits Required for the Program: **61**

Notes:

*First Year Language I and II meet the requirements, excludes conversational courses.
**Go to http://www4.wccnet.edu/departments/foreignlanguages/pdfs/Global_Studies_Course_Options.pdf

Liberal Arts Transfer (AALAT)
Associate in Arts Degree
Program Effective Term: **Fall 2013**

This program allows students to design a program of study to meet individual needs, and is a good option for students who are undecided about a major, or simply want to explore various areas in the arts and social sciences. This program allows for customization of coursework to meet the requirements of the transfer college or university. A counselor will assist in developing a program of study that meets all of the College's graduation requirements. A counselor can also help students determine interests, career and educational goals, as well as provide transfer and career information.

Major Concentrations (1-5)
Complete 15 credits from the following: ANT, ARB, ART, COM, DAN, DRA, ECO, ENG, FRN, GEO, GRM, HST, HUM, JRN, MUS, PHL, PLS, PSY, SOC, SPN and YOG.

Electives (100-level or above transferrable courses): Complete a minimum of 12 credits to bring the total credits to 60.

Articulation:
Central Michigan University, BS degree;
Savannah College of Art and Design, BFA degree;
Siena Heights, several BA and BFA degrees.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site:
http://www.wccnet.edu/departments/curriculum/articulation.php?levelone=colleges.

First Semester		(14 credits)
ENG 111	Composition I	4
	Math Elective(s)	4
	Major Concentration 1	3
	Major Concentration 2	3

Second Semester		(16 credits)
ENG 226	Composition II	3
	Elective(s) 100-level or above transferrable courses	3
	Elective(s) 100-level or above transferrable courses	3
	Major Concentration 3	3
	Nat. Sci. Elective(s)*	4

Third Semester		(15 credits)
COM 101	Fundamentals of Speaking	3
	Arts/Human. Elective(s)	3
	Computer Lit. Elective(s)	3
	Major Concentration 4	3
	Soc. Sci. Elective(s)	3

Fourth Semester		(15 credits)
	Arts/Human. Elective(s)	3
	Elective(s) 100-level or above transferrable courses	3
	Elective(s) 100-level or above transferrable courses	3
	Major Concentration 5	3
	Soc. Sci. Elective(s)	3

Minimum Credits Required for the Program: **60**

Notes:

*Transfer students should select a lab-based, MACRAO-approved science course.

Math and Science
Learn more about math or science through this associate degree program.

Environmental Science (ASENVS)
Associate in Science Degree
Program Effective Term: Fall 2013

This program is designed to prepare students to deal with environmental issues and concerns from a global point of view. Students will select from two tracks, one focusing on physical science and the other emphasizing the social science perspective. Both tracks integrate biology, chemistry and geology and lead to an Associate in Science degree which should transfer to 4-year institutions following the MACRAO guidelines. Students will have first-hand lab experiences studying environmental problems from a scientific perspective as well as proposing and implementing solutions to sustainability. The program prepares students for careers in resource management, waste management, sustainability, environmental consultation and other related fields.

Articulation:
Siena Heights University, BS degree.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/departments/curriculum/articulation.php?levelone=colleges

Minimum Concentration Credits Required for the Program:	**62**

Complete a concentration: Environmental Science or Environmental Science and Society.

Environmental Science Concentrations

Environmental Science (ENV1)		(62 credits)

First Semester		**(14 credits)**
ENG 111	Composition I	4
GLG 114	Physical Geology	4
MTH 178	General Trigonometry	3
	Computer Lit. Elective(s)	3

Second Semester		**(14 credits)**
BIO 162	General Biology II Cells and Molecules	4
ENG 226	Composition II	3
ENV 101	Environmental Science I	4
GEO 101	World Regional Geography	3

Third Semester		**(14 credits)**
CEM 111	General Chemistry I*	4
ENV 105	Introduction to Environment and Society	3
MTH 160	Basic Statistics	4
	Soc. Sci. Elective(s)**	3

Fourth Semester		**(10 credits)**
PHL 205	Ethics	3
PHY 111	General Physics I*	4
PLS 112	Introduction to American Government	3

Fifth Semester		**(10 credits)**
COM 101 or	Fundamentals of Speaking	
COM 183 or	Persuasion	
COM 225	Intercultural Communication***	3
ENV 201	Environmental Science II	4
	Arts/Human. Elective(s)***	3

Minimum Credits Required for the Concentration or Option: 62

Environmental Science and Society (ENV2)		(62 credits)

First Semester		**(14 credits)**
ENG 111	Composition I	4
GLG 100	Introduction to Earth Science	4
SOC 100	Principles of Sociology	3
	Computer Lit. Elective(s)	3

Program Information Report

Second Semester		(14 credits)
BIO 162	General Biology II Cells and Molecules	4
ENG 226	Composition II	3
ENV 101	Environmental Science I	4
GEO 101	World Regional Geography	3

Third Semester		(14 credits)
CEM 111	General Chemistry I*	4
ENV 105	Introduction to Environment and Society	3
MTH 160	Basic Statistics	4
	Elective to meet a minimum of 60 credit hours.#	3

Fourth Semester		(10 credits)
BIO 161	General Biology I Ecology and Evolution	4
PHL 205	Ethics	3
PLS 112	Introduction to American Government	3

Fifth Semester		(10 credits)
COM 101 or	Fundamentals of Speaking	
COM 183 or	Persuasion	
COM 225	Intercultural Communication***	3
ENV 201	Environmental Science II	4
	Arts/Human. Elective(s)***	3

Minimum Credits Required for the Concentration or Option: 62

Minimum Credits Required for the Program: **62**

Notes:

*The prerequisite for this course may include a higher math level than those used in the program. See an advisor for assistance.

**Recommended MACRAO approved social science courses: SOC 100, ECO 211 or ECO 222.

***Students transferring to EMU should consider taking either COM 225 or an Arts and Humanities Elective that should meet EMU's Diverse World Requirement. See the list located at: http://www4.wccnet.du/academicinfo/creditofferings/courses/emucrosscultural/

#Students transferring to EMU in the Environmental Science program should select GLG 276.

General Studies in Math and Natural Sciences (ASGSMS)
Associate in Science Degree
Program Effective Term: Fall 2013

This program allows students to design a program of study to meet their individual needs. This may be a good option if students are undecided about a major and want to explore a variety of discipline areas with a concentration in math and natural sciences. The program also allows students to customize their coursework to the requirements of the senior college or university to which they are transferring. Students should begin by meeting with a counselor who will assist them in developing a program of study that meets all of the College's graduation requirements. A counselor can also help students determine their interests and career and educational goals as well as provide transfer and career information.

Math/Science Concentration
Complete a concentration in math or science 15 credit hours from no more than two disciplines chosen from Biology, Chemistry, Math or Physics (A minimum of 6 credits at the 200 level is strongly recommended). Students transferring to EMU should select from the following WCC courses: BIO 103, BIO 208, BIO 215, BIO 227, BIO 228; CEM 111, CEM 122, CEM 211, CEM 222; MTH 191, MTH 192, MTH 197, MTH 293, MTH 295; PHY 111, PHY 122, PHY 211, PHY 222 or see an advisor to select courses that will meet the requirements of the college to which you are transferring.

Concentration 2
Complete a second concentration. Select 9 credits from no more than two disciplines listed below (A minimum of 3 credits at the 200 level is strongly recommended). Select from Anthropology, Arabic, Art, Astronomy, Biology, Chemistry, Communication, Criminal Justice, Dance, Drama, Economics, English, French, German, Health Science, History, Math, Music, Philosophy, Physics, Political Science, Psychology, Sociology or Spanish.

First Semester		(16 credits)
ENG 111	Composition I	4
	Concentration 2: select a course	3
	Math/Science concentration: select a course	3
	Soc. Sci. Elective(s)	3
	Speech Elective(s)	3

Second Semester		(13 credits)
ENG 226	Composition II	3
	MTH 191 or higher	4-5
	Arts/Human. Elective(s)	3
	Math/Science concentration: select a course	3

Third Semester		(16 credits)
	Computer Lit. Elective(s)	3
	Concentration 2: select a course	3
	Math/Science concentration: select a course	3
	Math/Science concentration: select a course	3
	Nat. Sci. Elective(s)*	4

Fourth Semester		(15 credits)
	Arts/Human. Elective(s)	3
	Concentration 2: select a course	3
	Math/Science concentration: select a course	3
	Soc. Sci. Elective(s)**	3
	Electives for total of 60 credits	3

Minimum Credits Required for the Program: **60**

Notes:

Transfer students should select a lab-based, MACRAO-approved science course. See WCC catalog for eligible courses.
**Transfer students attempting to satisfy MACRAO should complete an additional 2-3 credit hours in Social Science courses.*

Courses used to meet General Education Requirements cannot be counted toward the minimum credits for the concentrations.

Program Information Report

Math and Science (ASMSAS)
Associate in Science Degree
Program Effective Term: **Fall 2013**

This program prepares students to transfer to a four-year college or university to complete a bachelor's degree in biology, chemistry, computer science, math, or physics. The program will give students a solid foundation in math and science. Students should obtain program requirements and transfer equivalencies from the college to which they are transferring.

Complete the requirements for one of the following concentrations.

Biology/Pre-Medicine (BMED)
CEM 111 General Chemistry I
CEM 122 General Chemistry II
CEM 211 Organic Chemistry I
CEM 222 Organic Chemistry II
Elective: BIO 111, BIO 208, BIO 215, BIO 227, BIO 228, or BIO 237

Chemistry/Pre-Medicine (CMED)
CEM 111 General Chemistry I
CEM 122 General Chemistry II
CEM 211 Organic Chemistry I
CEM 222 Organic Chemistry II
MTH 197 Linear Algebra
MTH 293 Calculus III

Computer Science (COMS)
CPS 171 Introduction to Programming with C++
CPS 271 Object Features of C++
CPS 272 Data Structures with C++
MTH 197 Linear Algebra
MTH 293 Calculus III
Elective: Take an additional six credits in the CPS discipline

Mathematics (MATH)
MTH 160 Basic Statistics
MTH 197 Linear Algebra
MTH 293 Calculus III
MTH 295 Differential Equations
Elective: Take an additional three credits in the MTH discipline

Physics/Pre-Engineering (PENG)
CEM 111 General Chemistry I
MTH 197 Linear Algebra
MTH 293 Calculus III
MTH 295 Differential Equations
PHY 211 Analytical Physics I
PHY 222 Analytical Physics II

Articulation:
This program will fulfill MACRAO requirements if, in addition to the courses completed to meet General Education requirements, students complete one additional course in Social and Behavioral Science. Students must have their transcripts certified for MACRAO completion by the WCC Student Records Office.

Program Admission Requirements:
 - Students must have an Academic Math Level of 7 to begin the math sequence. Two years of high school algebra and one year of high school pre-calculus are recommended to prepare for this program.
 - The physics concentration requires one semester of high school physics or PHY 111 with a "C" or better to enroll in PHY 211.
- The biology, chemistry, and physics concentrations require one year of high school chemistry or CEM 090 with a "C" or better to enroll in CEM 111.

Minimum Concentration Credits Required for the Program: **61**

Math and Science Concentrations

Program Information Report

Biology/Pre-Medicine (BMED)   (61 credits)

First Semester   (15 credits)

BIO 162	General Biology II Cells and Molecules	4
CEM 111	General Chemistry I	4
MTH 176 or	College Algebra	
MTH 191	Calculus I*	4
Elective	Computer Lit. Elective(s)	3

Second Semester   (16 credits)

BIO 161	General Biology I Ecology and Evolution	4
CEM 122	General Chemistry II	4
ENG 111	Composition I	4
MTH 160 or	Basic Statistics**	
MTH 192	Calculus II	4

Third Semester   (14 credits)

CEM 211	Organic Chemistry I	4
ENG 226	Composition II	3
Elective	Soc. Sci. Elective(s)	3
Elective	Select one course from the following: BIO 111, BIO 208***, BIO 215, BIO 227, BIO 228 or BIO 237	4

Fourth Semester   (16 credits)

CEM 222	Organic Chemistry II	4
COM 101	Fundamentals of Speaking	3
Elective	Arts/Human. Elective(s)	3
Elective	Soc. Sci. Elective(s)	3
Elective	Arts/Human. Elective(s)	3

Minimum Credits Required for the Concentration or Option: 61

Chemistry/Pre-Medicine (CMED)   (66 credits)

First Semester   (16 credits)

CEM 111	General Chemistry I	4
MTH 191	Calculus I	5
PHY 111	General Physics I	4
Elective	Computer Lit. Elective(s)	3

Second Semester   (16 credits)

CEM 122	General Chemistry II	4
ENG 111	Composition I	4
MTH 192	Calculus II	4
PHY 122	General Physics II	4

Third Semester   (14 credits)

CEM 211	Organic Chemistry I	4
ENG 226	Composition II	3
MTH 197	Linear Algebra	4
Elective	Soc. Sci. Elective(s)	3

Fourth Semester   (14 credits)

COM 101	Fundamentals of Speaking	3
CEM 222	Organic Chemistry II	4
MTH 293	Calculus III	4
Elective	Arts/Human. Elective(s)	3

Fifth Semester   (6 credits)

Elective	Soc. Sci. Elective(s)	3
Elective	Arts/Human. Elective(s)	3

Minimum Credits Required for the Concentration or Option: 66

Program Information Report

Computer Science (COMS)		**(68 credits)**
First Semester		**(12 credits)**
MTH 191	Calculus I	5
PHY 111	General Physics I	4
Elective	Computer Lit. Elective(s)	3
Second Semester		**(16 credits)**
CPS 171	Introduction to Programming with C++	4
ENG 111	Composition I	4
MTH 192	Calculus II	4
PHY 122	General Physics II	4
Third Semester		**(14 credits)**
CPS 271	Object Features of C++	4
ENG 226	Composition II	3
MTH 197	Linear Algebra	4
PSY 100	Introduction to Psychology	3
Fourth Semester		**(14 credits)**
CPS 272	Data Structures with C++	4
MTH 293	Calculus III	4
Elective	Arts/Human. Elective(s)	3
Elective	Take an additional three credits in the CPS discipline	3
Fifth Semester		**(12 credits)**
COM 101	Fundamentals of Speaking	3
PLS 112	Introduction to American Government	3
Elective	Arts/Human. Elective(s)	3
Elective	Take an additional three credits in the CPS discipline	3

Minimum Credits Required for the Concentration or Option:　68

Mathematics (MATH)		**(61 credits)**
First Semester		**(16 credits)**
BIO 162 or	General Biology II Cells and Molecules	
CEM 111 or	General Chemistry I	
PHY 111	General Physics I	4
MTH 191	Calculus I	5
Elective	Computer Lit. Elective(s)	3
ENG 111	Composition I	4
Second Semester		**(15 credits)**
BIO 161 or	General Biology I Ecology and Evolution	
CEM 122 or	General Chemistry II	
PHY 122	General Physics II	4
MTH 160	Basic Statistics	4
MTH 192	Calculus II	4
Elective	Soc. Sci. Elective(s)	3
Third Semester		**(17 credits)**
COM 101	Fundamentals of Speaking	3
ENG 226	Composition II	3
MTH 197	Linear Algebra	4
MTH 293	Calculus III	4
Elective	Soc. Sci. Elective(s)	3
Fourth Semester		**(13 credits)**
MTH 295	Differential Equations	4
Elective	Arts/Human. Elective(s)	3
Elective	Arts/Human. Elective(s)	3
Elective	Take an additional three credits in the MTH discipline	3

Minimum Credits Required for the Concentration or Option:　61

Program Information Report

Physics/Pre-Engineering (PENG)   (68 credits)

First Semester   (16 credits)

CEM 111	General Chemistry I	4
MTH 191	Calculus I	5
PHY 111	General Physics I	4
Elective	Computer Lit. Elective(s)	3

Second Semester   (15 credits)

ENG 111	Composition I	4
MTH 192	Calculus II	4
PHY 122	General Physics II	4
Elective	Arts/Human. Elective(s)	3

Third Semester   (15 credits)

ENG 226	Composition II	3
MTH 197	Linear Algebra	4
PHY 211	Analytical Physics I	5
Elective	Soc. Sci. Elective(s)	3

Fourth Semester   (15 credits)

COM 101	Fundamentals of Speaking	3
MTH 293	Calculus III	4
PHY 222	Analytical Physics II	5
Elective	Arts/Human. Elective(s)	3

Fifth Semester   (7 credits)

MTH 295	Differential Equations	4
Elective	Soc. Sci. Elective(s)	3

Minimum Credits Required for the Concentration or Option: 68

Minimum Credits Required for the Program: **61**

Notes:

*Students transferring to EMU as a biology major may substitute MTH 176 or any higher 4-credit hour math course for MTH 191.
**Students transferring to EMU as a biology major may substitute MTH 160 or higher for MTH 192.
***Students transferring to EMU as a biology major may consider completing BIO 208 at WCC prior to transfer.

Nursing

Prepare for a career in a variety of health care settings through these certificate and associate in applied science degree program.

Nursing, Registered/Davenport Bachelor Completion Program BSN (TR02N1NURS)
Associate Degree/3+1 Transfer
Program Effective Term: Fall 2013

This program prepares students for challenging and exciting jobs in all settings of health care, from the hospital to home care. Students will gain proficiency in technical aspects of nursing care, such as medication administration, treatments and procedures, and use of medical technology. Students will also earn credits that transfer to Davenport University's BSN Nursing Completion program. Check with an advisor for information on transferring.

Articulation:
Davenport University

www.wccnet.edu/departments/curriculum/articulation.php?levelone=colleges.

Requirements	(72 credits)
Complete a maximum of seventy-two credits at Washtenaw Community College as outlined on the Articulation Agreement.	72
Complete a minimum of forty-nine credits at Davenport University as outlined on the Articulation Agreement.	0

Minimum Credits Required for the Program: **72**

Nursing, Registered/EMU BSN Completion (TR01N1NURS)
Associate Degree/3+1 Transfer
Program Effective Term: Fall 2013

This program is designed for students transferring to Eastern Michigan University where they will earn a BSN in the Nursing Completion program. Students are prepared for challenging and exciting jobs in all settings of health care, from the hospital to home care. Students will gain proficiency in technical aspects of nursing care, such as medication administration, treatments and procedures, and use of medical technology. Check with an advisor for information on transferring.

Articulation:
EMU Nursing Completion BSN

www.wccnet.edu/departments/curriculum/articulation.php?levelone=colleges

Requirements	(97 credits)
Complete a maximum of ninety-seven credits at Washtenaw Community College as outlined on the Articulation Agreement.	97
Complete a minimum of thirty credits at EMU as outlined on the Articulation Agreement.	0

Minimum Credits Required for the Program: **97**

Nursing, Registered/EMU Technology Management BS (TR01N2NURS)
Associate Degree/3+1 Transfer
Program Effective Term: Fall 2013

This program is designed for students who are interested in Eastern Michigan University's Technology Management program. The curriculum provides the necessary foundation to meet the changing needs of management in the health field. Check with an advisor for information on transferring.

Articulation:
EMU Technology Management BS

www.wccnet.edu/departments/curriculum/articulation.php?levelone=colleges

Requirements	(94 credits)
Complete a maximum of ninety-four credits at Washtenaw Community College as outlined on the Articulation Agreement.	94
Complete a minimum of thirty credits at EMU as outlined on the Articulation Agreement.	0

Minimum Credits Required for the Program: **94**

Nursing, Registered/UM (Flint) Nursing BSN (TR05N1NURS)
Associate Degree/3+1 Transfer
Program Effective Term: **Fall 2013**

This program prepares students for challenging and exciting jobs in all settings of health care, from the hospital to home care. Students will gain proficiency in technical aspects of nursing care, such as medication administration, treatments and procedures, and use of medical technology. Students will also earn credits that transfer to UM- Flint's BSN program. Check with an advisor for information on transferring.

Articulation:
Univ of Mich Flint Nursing

www.wccnet.edu/departments/curriculum/articulation.php?levelone=colleges

Requirements	(75 credits)
Complete a maximum of seventy-five credits at Washtenaw Community College as outlined on the Articulation Agreement.	75
Complete a minimum of forty-five credits at UM-Flint as outlined on the Articulation Agreement.	0

Minimum Credits Required for the Program: **75**

Pharmacy Technology
Work with a professional pharmacist to meet the medication and customer service needs of individuals in a variety of settings.

Pharmacy Technology/EMU Health Administration BS (TR01P1PHT)
Associate Degree/3+1 Transfer
Program Effective Term: Fall 2013

This program prepares students for transfer to a bachelor's of science degree program at Eastern Michigan University. Students are trained for health administration jobs in nursing homes, home health agencies, outpatient facilities, hospitals, public health agencies, health maintenance organizations and many other health care settings. Check with an advisor for information on transferring.

Articulation:
EMU Health Administration

www.wccnet.edu/departments/curriculum/articulation.php?levelone=colleges

Requirements	(94 credits)
Complete a maximum of ninety-four credits at Washtenaw Community College as outlined on the Articulation Agreement.	94
Complete a minimum of thirty credits at EMU as outlined on the Articulation Agreement.	0

Minimum Credits Required for the Program: **94**

Program Information Report

Pharmacy Technology/EMU Technology Management BS (TR01P2PHT)
Associate Degree/3+1 Transfer
Program Effective Term: **Fall 2013**

This program is designed for students who are interested in Eastern Michigan University's Technology Management program. The curriculum provides the necessary foundation to meet the changing needs of management in the health field. Check with an advisor for information on transferring.

Articulation:
EMU Technology Management BS

www.wccnet.edu/departments/curriculum/articulation.php?levelone=colleges

Requirements	(94 credits)
Complete a maximum of ninety-four credits at Washtenaw Community College as outlined on the Articulation Agreement.	94
Complete a minimum of thirty credits at EMU as outlined on the Articulation Agreement.	0

Minimum Credits Required for the Program: **94**

Photography
Develop skills in composition, processing and presentation needed for a satisfying career in professional photography or as a means of personal expression.

Program Information Report

Photographic Technology/College for Creative Studies Photography BFA (TR06P1PHOT)
Associate Degree/3+1 Transfer
Program Effective Term: **Fall 2013**

This program provides a comprehensive foundation in digital and film based photography. Through a combination of required basic courses and specialized elective courses, the student customizes the program to his or her particular interest in the photographic industry. Students have opportunities to work with a variety of advanced photographic equipment including digital cameras, view cameras, traditional darkroom, and various types of studio and location lighting systems. Graduating students produce professional portfolios and self-promotional materials to find employment in a variety of areas such as photographic assisting, photojournalism, fine art, freelance, portrait and wedding photography. Students also complete the program to use photography as a means of personal expression, and as preparation for transferring to the College for Creative Studies.

Students should choose the appropriate faculty for academic advising based on their last name: Terry Abrams (A-G), Jennifer Baker (H-O), Donald Werthmann (P-Z).

Articulation:
CCS Photography BFA

http://www.wccnet.edu/departments/curriculum/articulation.php?levelone=colleges

Requirements	(81 credits)
Complete a maximum of eighty-one at Washtenaw Community College as outlined on the Articulation Agreement.	81
Complete a minimum of forty-five credits at College for Creative Studies as outlined on the Articulation Agreement.	

Minimum Credits Required for the Program: **81**

Physical Therapist Assistant
Work with a physical therapist to provide selected services to patients with a wide variety of conditions.

Program Information Report

Physical Therapist Assistant/Davenport Health Services Administration BBA (TR02T1PTA)
Associate Degree/3+1 Transfer
Program Effective Term: Fall 2013

This program is designed for students transferring to Davenport University. They will earn a bachelor in business administration degree in Health Services Administration (HSA). The degree will prepare students for various management responsibilities in a variety of health care settings. Check with an advisor for information on transferring.

Articulation:
Davenport University

www.wccnet.edu/departments/curriculum/articulation.php?levelone=colleges

Requirements	(65 credits)
Complete a maximum of sixty-five credits at Washtenaw Community College as outlined on the Articulation Agreement.	65
Complete a minimum of sixty-five credits at Davenport University as outlined on the Articulation Agreement.	0

Minimum Credits Required for the Program: **65**

Physical Therapist Assistant/EMU Health Administration BS (TR01T1PTA)
Associate Degree/3+1 Transfer
Program Effective Term: Fall 2013

This program prepares students for transfer to a bachelor's of science degree program at Eastern Michigan University. Students are trained for health administration jobs in nursing homes, home health agencies, outpatient facilities, hospitals, public health agencies, health maintenance organizations and many other health care settings. Check with an advisor for information on transferring.

Articulation:
EMU Health Administration

www.wccnet.edu/departments/curriculum/articulation.php?levelone=colleges

Requirements	(94 credits)
Complete a maximum of ninety-four credits at Washtenaw Community College as outlined on the Articulation Agreement.	94
Complete a minimum of thirty credits at EMU as outlined on the Articulation Agreement.	0

Minimum Credits Required for the Program: **94**

Radiography
Prepare for a career as a radiographer, operating medical imaging equipment.

Radiography/Davenport Health Services Administration BBA (TR02R1RAD)
Associate Degree/3+1 Transfer
Program Effective Term: Fall 2013

This program is designed for students transferring to Davenport University. They will earn a bachelor in business administration degree in Health Services Administration (HSA). The degree will prepare students for various management responsibilities in a variety of health care settings. Check with an advisor for information on transferring.

Articulation:
Davenport University

http://www.wccnet.edu/departments/curriculum/articulation.php?levelone=colleges

Requirements	(71 credits)
Complete a maximum of seventy-one credits at Washtenaw Community College as outlined on the Articulation Agreement.	71
Complete a minimum of sixty-one credits at Davenport University as outlined on the Articulation Agreement.	0

Minimum Credits Required for the Program: **71**

Radiography/EMU Health Administration BS (TR01R1RAD)
Associate Degree/3+1 Transfer
Program Effective Term: Fall 2013

This program prepares students for transfer to a bachelor's of science degree program at Eastern Michigan University. Students are trained for health administration jobs in nursing homes, home health agencies, outpatient facilities, hospitals, public health agencies, health maintenance organizations and many other health care settings. Check with an advisor for information on transferring.

Articulation:
EMU Health Administration

http://www.wccnet.edu/departments/curriculum/articulation.php?levelone=colleges

Requirements	(94 credits)
Complete a maximum of ninety-four credits at Washtenaw Community College as outlined on the Articulation Agreement.	94
Complete a minimum of thirty credits at EMU as outlined on the Articulation Agreement.	0

Minimum Credits Required for the Program: **94**

Radiography/EMU Technology Management BS (TR01R2RAD)
Associate Degree/3+1 Transfer
Program Effective Term: Fall 2013

This program is designed for students who are interested in Eastern Michigan University's Technology Management program. The curriculum provides the necessary foundation to meet the changing needs of management in the health field. Check with an advisor for information on transferring.

Articulation:
EMU Technology Management BS

http://www.wccnet.edu/departments/curriculum/articulation.php?levelone=colleges

Requirements	(94 credits)
Complete a maximum of ninety-four credits at Washtenaw Community College as outlined on the Articulation Agreement.	94
Complete a minimum of thirty credits at EMU as outlined on the Articulation Agreement.	0

Minimum Credits Required for the Program: **94**

Social Work
This program prepares you to transfer to a bachelor's degree program in social work.

Human Services (AAHUST)
Associate in Arts Degree
Program Effective Term: Fall 2013

This program prepares students for a job as a substance abuse, hospice, case, psychiatric, or social services aide in settings such as schools, rehabilitation centers, and mental health clinics or as a staff member in a community/neighborhood center. The program provides skills students will need to work on a one-to-one basis or in groups to help people cope with problems. The program also prepares students to transfer to a bachelor's degree program where they will continue developing skills for a career in the field of social work. The program transfers to Eastern Michigan University and Madonna University.

Articulation:
Eastern Michigan University, BSW degree*
Kaplan University, BS degree;
Madonna University, BSW degree.

*Students should meet with an EMU Department of Social Work advisor before applying for admission to EMU's program. This program meets MACRAO. Students must have their transcripts certified for MACRAO completion by the WCC Student Records Office.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/departments/curriculum/articulation.php?levelone=colleges.

Applying for Admission to the Program:
The faculty and administration reserve the right to admit and retain only those students who, in their judgment, possess academic and personal suitability for the Human Services Program. Suitability criteria are listed below and also can be found in the Human Services Student Handbook.

Applications to the program must be made during the semester that students are enrolled in HSW 100 (Introduction to Human Services). Interested students who are enrolled in the course will be invited to submit a written request for an admission interview.

Program Admission Requirements:
Applicants must have the following:
   -Academic Math Level of 2
   -Academic Reading and Writing Levels of 6

Applicants must enroll in HSW 100 and complete the course with a grade of "C" or better.

Applicants must meet the following suitability criteria:
   - Has a cumulative GPA of 2.0 in all WCC courses
   - Demonstrates honesty in dealings with other students and faculty
   - Demonstrates behavior conforming to the National Organization for Human Service Education's "Ethical Standards of Human Service Professionals" (printed in the program handbook)
   - Presents in an appropriate and professional manner in the interview
   - Demonstrates evidence of being able to relate to clients in a helpful manner
   - Applicants must submit a letter of recommendation from a non-family member who knows them well such as a minister, employer, or teacher.

Continuing Eligibility Requirements:
Faculty will review students' eligibility for the program on an ongoing basis.

1. Students must maintain satisfactory academic class performance, as evidenced by a minimum cumulative GPA of 2.0.
2. Students must earn a "C" or better in all HSW courses.
3. To enroll in the Human Services field internships, students must have completed HSW 100, HSW 150, HSW 200 and SOC 220 with a "C" or better.
4. Students must maintain at least an 80% rate of attendance in class and in an internship placement.
5. Students must honor any agreement entered into with an agency serving as an internship site.
6. Students must maintain ethical behavior as defined in the National Organization for Human Service Education's "Ethical Standards of Human Services Professionals."
7. Students should be aware that internship sites might conduct background checks on applicants to determine if they have been convicted of a crime or are addicted to drugs or alcohol.

Program Information Report

First Semester		(13 credits)
ENG 111	Composition I	4
HSW 100	Introduction to Human Services	3
PSY 100	Introduction to Psychology	3
SOC 100	Principles of Sociology	3

Second Semester		(16 credits)
ENG 226	Composition II	3
HSW 200	Interviewing and Assessment	3
SOC 205	Race and Ethnic Relations	3
SOC 220	Group Dynamics and Counseling	3
	Restricted Math Elective(s)*	4

Third Semester		(16 credits)
PSY 206	Life Span Developmental Psychology	4
PSY 210	Behavior Modification	3
PSY 257	Abnormal Psychology	3
SOC 225	Family Social Work	3
	Arts/Human. Restricted Elective(s)**	3

Fourth Semester		(16 credits)
BIO 101 or	Concepts of Biology	
BIO 102	Human Biology	4
COM 101 or	Fundamentals of Speaking	
COM 102	Interpersonal Communication	3
HSW 230	Field Internship and Seminar I	3
	Arts/Human. Elective(s)***	3
	Computer Lit. Elective(s)	3

Minimum Credits Required for the Program: **61**

Notes:

Select one of the following courses: MTH 125, MTH 160, MTH 176, MTH 181 or MTH 191. Transfer students should check with their selected school to confirm the math and/or credit requirements.

**Select one of the following courses: ART 143, ART 150, DAN 180, ENG 213, ENG 214, ENG 224 or ENG 242.*

***Select another course from the Humanities section of the MACRAO list. Do not choose any Communication (COM) courses. Do not choose any courses in bold, they don't meet WCC General Education requirements.*

If transferring to Madonna University, follow the curricular guide for that university. See a program advisor for details.

Addiction Studies (CPAS)
Post-Associate Certificate
Program Effective Term: **Fall 2013**

This program is designed for professionals interested in pursuing Certified Alcohol and Drug Counseling (CADC) certification through the State of Michigan. Courses focus on knowledge and skills necessary for working with clients with substance abuse disorders. This program will fulfill the educational requirements needed for CADC. Additional requirements for work experience and supervision must be met outside of this program.

Major/Area Requirements		(12 credits)
HSW 296	Neuropsychology of Addiction	3
HSW 297	Assessment of Co-occurring Disorders	3
HSW 298	Treatment of Addiction*	3
PSY 240	Drugs, Society and Human Behavior	3

Minimum Credits Required for the Program: **12**

Notes:

*Must be the last course taken in the sequence of courses.

Human Services/EMU Bachelor of Social Work BSW (TR01H1HUST)
Associate Degree/3+1 Transfer
Program Effective Term: **Fall 2013**

This program prepares students for a job as a substance abuse, hospice, case, psychiatric, or social services aide in settings such as schools, rehabilitation centers, and mental health clinics or as a staff member in a community/neighborhood center. The program provides skills students will need to work on a one-to-one basis or in groups to help people cope with problems. The program also prepares students to transfer to a bachelor's degree program where they will continue developing skills for a career in the field of social work at Eastern Michigan University.

Articulation:
EMU Social Work BS

http://www.wccnet.edu/departments/curriculum/articulation.php?levelone=colleges

Requirements	(73 credits)
Complete a maximum of seventy-three credits at Washtenaw Community College as outlined on the Articulation Agreement.	73
Complete a minimum of fifty-one credits at EMU as outlined on the Articulation Agreement.	

Minimum Credits Required for the Program: **73**

Welding and Fabrication
Learn skills from beginning welding to advanced fabrication for a career as a welding maintenance mechanic.

Welding/Davenport Applied Business BBA (TR02W1WLDT)
Associate Degree/3+1 Transfer
Program Effective Term: **Fall 2013**

The Bachelor of Business Administration - General Business allows students to apply technical skills learned in welding along with knowledge in the major business disciplines to careers in Operations, Management, Strategic Planning and Finance.

Articulation:
Davenport University

www.wccnet.edu/departments/curriculum/articulation.php?levelone=colleges

Requirements	(87 credits)
Complete a maximum of eighty-seven credits at Washtenaw Community College as outlined on the Articulation Agreement.	87
Complete a minimum of thirty-four credits at Davenport University as outlined on the Articulation Agreement.	0

Minimum Credits Required for the Program: **87**

Program Information Report

Welding/EMU Applied Technology BS (TR01W1WLDT)
Associate Degree/3+1 Transfer
Program Effective Term: **Fall 2013**

This program prepares students to transfer to a bachelor of science program in Applied Technology. Students will apply welding skills to the automation and manufacturing environment.

Articulation:
EMU Applied Technology BS

www.wccnet.edu/departments/curriculum/articulation.php?levelone=colleges

Requirements	(94 credits)
Complete a maximum of ninety-four credits at Washtenaw Community College as outlined on the Articulation Agreement.	94
Complete a minimum of thirty credits at Eastern Michigan University as outlined on the Articulation Agreement.	0

Minimum Credits Required for the Program: **94**

Program Information Report

Welding/EMU Technology Management BS (TR01W2WLDT)
Associate Degree/3+1 Transfer
Program Effective Term: **Fall 2013**

This program prepares students to transfer to a bachelor of science program in Technology Management. Students will apply welding skills to the industrial and technical environments.

Articulation:
EMU Applied Technology BS

www.wccnet.edu/departments/curriculum/articulation.php?levelone=colleges

Requirements	(94 credits)
Complete a maximum of ninety-four credits at Washtenaw Community College as outlined on the Articulation Agreement.	94
Complete a minimum of thirty credits at Eastern Michigan University as outlined on the Articulation Agreement.	0

Minimum Credits Required for the Program: **94**

SECTION III

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Course Information Report (Bulletin)
Active Courses

ACS 065   Success Skills Workshop   3 credits
Level I Prerequisites: Academic Reading Level 3; no minimum writing level
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students explore skills and habits that lead to academic and personal success. Through class activities, application examples and journal writing, students will increase self-esteem, motivation, and emotional intelligence. Other topics include an introduction to active learning, learning preferences, time management, and effective communication. Personal and academic goal-setting will be explored.

ACS 095   Student Success Seminar   3 credits
Level I Prerequisites: Academic Reading Levels 4 or 5; no minimum writing level
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students learn to develop skills and habits that lead to academic, professional, and personal success. Through readings, activities, and journal writing, students will increase personal responsibility, self-motivation, self-management, interdependence, self-awareness, emotional intelligence, lifelong learning, and self-esteem. Other topics include an introduction to learning styles, reading and writing strategies, note-taking, studying tips, time management, effective communication, and money management. Personal, academic and career goal-setting will be explored.

ACS 101   Academic Skills Seminar   1 credit
Level I Prerequisites: Academic Reading Level 4 or REA 070 or REA 071, may enroll concurrently; no minimum writing level; Academic Math Level 0 or 1
15 lecture, 0 lab, 0 clinical, 0 other, 15 total contact hours

In this course, students will develop skills and habits that lead to academic success. The following topics will be explored: Learning styles, study strategies, note-taking, test-taking, learning and memory techniques, textbook reading strategies, writing strategies, organizational skills and time management techniques. The title of this course was previously Student Success Seminar.

ACS 105   Advanced Vocabulary   3 credits
Level I Prerequisites: Academic Reading Level 4; no minimum writing level; ACS 107 or ACS 108, may enroll concurrently
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course is designed to expand vocabulary and improve word recognition skills for college-bound students. Major areas of emphasis include the study of word derivations, context clues, dictionary skills, vocabulary acquisition strategies, pronunciation skills and some work with American idioms. An American historical novel is read and discussed to provide practice for new word acquisition skills. An individual final project is assigned where students teach specialized vocabulary from the academic area of their own choosing to the rest of the class.

ACS 107   College Reading and Study Skills   4 credits
Level I Prerequisites: Academic Reading Level 4; no minimum writing level
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students improve study skills and develop rapid reading techniques. Instructional units include the essentials for academic success: comprehensive textbook reading skills, vocabulary development, learning styles, time management, note-taking, reading rate strategies, test-taking and 21st century literacies. Successful completion of this course with a minimum grade of "C" will raise your Academic Reading level to 5. The title of this course was previously College Study Skills and Speed Reading.

ACS 108   Critical Reading and Thinking   3 credits

Level I Prerequisites: Academic Reading Level 5; Academic Writing Level 3
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, higher order thinking strategies necessary for the interpretation and evaluation of reading content are refined and expanded. Students will develop critical reading and thinking skills needed in order to comprehend, analyze and interpret college-level materials as well as materials they encounter in the outside world. Students will develop language proficiency and become independent learners. For other reading courses, look under Reading (REA). Successful completion of this course with a minimum grade of "C" will raise your Academic Reading level to 6. The title of this course was previously Problem Analysis and Critical Thinking.

ACS 110   Speed Reading   2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

Through a variety of materials, technology and activities, students will learn strategies to increase reading speed, comprehension and critical reading skills. This college level course will improve the ability to meet the demands of the large amount of academic and career-related reading and will also enhance leisure reading.

ACS 111   College Success Seminar   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course enables students to analyze and evaluate the beliefs, attitudes, behaviors and skills that lead to academic, career and personal success. Through self-assessment, readings, activities and journal writing, students will synthesize data in order to improve self-management, increase self-esteem and maximize learning. Other topics include money management, effective use of college resources, critical thinking and decision making and effective writing and communication. Academic, career and personal goal setting will be explored. The title of this course was previously First Year Experience Seminar.

ACS 121   Career Planning Seminar   2 credits

Level I Prerequisites: Academic Reading Level 4; Academic Writing Level 3
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

This course is designed for persons undecided about a program of study or career goal or interested in making a career change. Students complete a self-assessment of interests, work values, skills and abilities through exercises and vocational inventories. Students will also learn how to research careers, become more knowledgeable of careers, career alternatives and employment trends through the use of course materials, classroom activities, and in-class guest speakers. Other topics include: decision making, job skills, self-esteem and work attitude.

ACS 122   Career Decision Making   1 credit

Level I Prerequisites: Academic Reading Level 5; Academic Writing Level 6 or ENG 090 or ENG 091, may enroll concurrently
15 lecture, 0 lab, 0 clinical, 0 other, 15 total contact hours

This course is designed for persons undecided about a program of study or career goal or contemplating changing careers. Students complete self-assessments of interests, work values, skills and abilities, personality preferences through exercises and vocational inventories. They also conduct informational interviews with professionals in their fields of interest.

ACS 123   Information Literacy   **1 credit**
Level I Prerequisites: Academic Reading and Writing Levels of 6
15 lecture, 0 lab, 0 clinical, 0 other, 15 total contact hours

In this course, students receive an introduction to techniques of information retrieval and information evaluation. Students completing this course will have the skills needed to locate and evaluate information, to think critically about research strategies and to apply these concepts to research using library resources and the Internet.

Accounting   ACC

ACC 100   Accounting Practices for Business   **3 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 2
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course introduces students to accounting processes and practices. Emphasis is placed on the systems for purchases and payments, billing and collections, basic bookkeeping and payroll. The class is designed for the non-accounting major. This course is not designed for transfer to four-year colleges. This course was previously ACC 091. The title of this course was previously Fundamentals of Accounting I.

ACC 110   Payroll Accounting   **2 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 3 or higher or MTH 125 minimum grade
                              "C"
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

This course covers basic concepts/principles and legal requirements of payroll accounting. Areas of study include payroll record keeping, Federal laws, computation of gross wages and salaries, payroll taxes, deductions, and completing government forms and reports.

ACC 111   Principles of Accounting I   **3 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 4 or MTH 125 or MTH 160, minimum grade
                              "C"; MTH 125 or MTH 160, may enroll concurrently
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This is an introductory course in accounting principles and theory with emphasis on the accounting cycle, recording and valuation of assets and current liabilities, financial reporting and an introduction to accounting systems and controls. Students will also perform financial analyses which will include assessing a company's ability to pay off its current liabilities.

ACC 122   Principles of Accounting II   **3 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6; ACC 111
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course is a continuation of Principles of Accounting I covering partnerships, corporations, financial analyses, and an introduction to managerial accounting. Students learn how to identify financial accounting information pertaining to business entities and to evaluate a company's performance and forecast future performance.

ACC 131   Accounting Information Systems   3 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6; ACC 100 or ACC 111, may enroll concurrently
15 lecture, 30 lab, 0 clinical, 0 other, 45 total contact hours

Accounting Information Systems prepares students to design and maintain accounting information systems using the personal computer. The course is presented and mastered on the personal computer in such a manner that no prior knowledge of personal computers is required. The title of this course was previously Computer Applications in Accounting.

ACC 174   ACC Co-op Education I   1-3 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6; Two courses in ACC discipline; consent required
0 lecture, 0 lab, 0 clinical, 120 other, 120 total contact hours

In this course, students gain skills from a new experience in an approved, compensated, business-related position. Together with the instructor and employer, students set up work assignments and learning objectives to connect classroom learning with career-related work experience. This is the first of two co-op courses.

ACC 213   Intermediate Accounting   3 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6; ACC 122 minimum grade "C"; Academic Math Level 4 or MTH 125 or any math level 4 or higher course with a minimum grade of "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students continue the study of generally accepted accounting principles as they relate to financial accounting standards, financial statement presentation, and to the recording, valuation and disposition of assets and contingent liabilities. Students will also evaluate a company's financial performance.

ACC 225   Managerial Cost Accounting   3 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6; ACC 122
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

Principles and procedures for planning, reporting, and controlling cost. Topics will include: managerial cost accounting fundamentals, tools for planning and control, process costing and capital investment decisions.

ACC 274   ACC Co-op Education II   1-3 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6; ACC 174; consent required
0 lecture, 0 lab, 0 clinical, 120 other, 120 total contact hours

This is the second of two co-op courses in which students gain skills from a new experience in an approved, compensated, business-related position. Together with the instructor and employer, students set up work assignments and learning objectives to connect classroom learning with career-related work experience.

Advanced Manufacturing Systems   AMS
AMS 103   Materials and Processes   3 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 15 lab, 0 clinical, 0 other, 60 total contact hours

This course includes an introduction to basic terms, mechanical and physical properties, and characteristics and structures of materials. Heat treatment of ferrous and non-ferrous metals and the effect on tensile, torsion, and impact will be investigated. The study of common consumer products will identify material types and processes used in manufacturing. In a capstone project, we will associate two different materials to a product identifying the advantages and disadvantages for both. Mechanical and physical properties, characteristics, ease of manufacturing, cost, environmental impact, and life cycle will be compared. This course was previously MTT 103.

Animation   ANI

ANI 145   Concept Development for Animation   **2 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

This course is an introduction to the conceptualization process that precedes the creation of an animation. Students will participate in all phases of developing an idea for animation: research, plan, ideation, storyboarding, and logic.

ANI 150   3D Animation I: Modeling   **4 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6
60 lecture, 0 lab, 0 clinical, 30 other, 90 total contact hours

This course introduces students to creating digital 3D forms for animation. Various techniques (wire frame, compound primitives and NURBS) are used to construct 3D forms. Using industry-standard software, students develop 3D modeling/animation skills while learning the technical vocabulary needed for the 3D modeling/animation industry. Students create and apply textures and lighting to digital 3D forms, investigate camera positioning/point of view and perform simple rotational animation.

ANI 155   Textures and Studio Lighting for Animation   **4 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6
30 lecture, 0 lab, 0 clinical, 60 other, 90 total contact hours

Using traditional studio techniques and Adobe Photoshop, students will learn to enhance form through use of lighting effects, cast shadows, highlights, and reflections.

ANI 160   Fundamentals of Movement and Animation   **4 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6
60 lecture, 0 lab, 0 clinical, 30 other, 90 total contact hours

This is an introductory course in moving and animating 3D models. Students will learn the theory of motion, movement and established principles of animating and apply these to their 3D artwork. Using existing models, they will develop motion and animation skills. Students will animate rigid objects, organic objects and simple characters. Students will be exposed to keyframe animation and direct animation.

ANI 230   Motion and Sound   **2 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; ANI 145, ANI 150 and GDT 108, minimum grade "C"
Corequisites: ANI 250
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

This course focuses on the knowledge and skills needed to produce motion and sound for animations. Characteristics of space and movement, as well as concepts and techniques related to the generation and use of sound, will be studied. This course is an integral part of assembling animations, as well as bringing them to life with editing, and Foley arts.

ANI 250   3D Animation II   **4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; ANI 145, ANI 150, and GDT 108, minimum grade "C"
Corequisites: ANI 230
60 lecture, 0 lab, 0 clinical, 30 other, 90 total contact hours

This course builds on the 3D skills of ANI 150. The course will work on proficiency and efficiency in model construction, texture building, and furthering concepts in modeling for animation. The class will explore photorealistic rendering, keyframing, inverse and forward kinematics, and more complex animations. The class will pinnacle in a finished output to video for presentation.

ANI 260   3D Animation III   **4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; ANI 155, ANI 160 and ANI 250, minimum grade "C"
60 lecture, 0 lab, 0 clinical, 30 other, 90 total contact hours

This course builds skills from previous 3D animation courses at a more advanced level. Students will develop proficiency and efficiency in model construction, texture building, and furthering concepts in modeling for animation. The class will explore animation and rigging, photorealistic rendering, special effects, and scene construction.

Anthropology   ANT

ANT 201   Introduction to Cultural Anthropology   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course will employ anthropological theory and method to survey the human experience from a holistic perspective. Relationships between human biology, psychology and culture will be examined utilizing the essential concepts and methods that typify cultural anthropology so that the student may better understand and appreciate the diversity of culture and the flexibility of human adaptations.

ANT 202   Introduction to Physical Anthropology   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course will examine the human species from a biological and bio-cultural perspective. Major areas of coverage include the process of evolution, human genetics, human variation, adaptive and developmental responses to stress, biological systematics, primate studies, human fossil remains and Paleolithic archaeological findings.

ANT 205   Introduction to Archaeology   **3 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course provides a survey of anthropological archaeology. Topics covered include the following: basic goals of archaeology, archaeological methods and techniques used to research the material record of human behavior, and core anthropological theories used to explain human evolution and socio-cultural change. Archaeological site reports will be used throughout the course to illustrate research practices.

Arabic   **ARB**

ARB 111   First Year Arabic I   **5 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6
75 lecture, 0 lab, 0 clinical, 0 other, 75 total contact hours

This course is an introduction to Modern Standard Arabic in which students develop skills in listening, speaking, reading, and writing. Students explore the language through multimedia (CD and DVD), dictation, instructor-prepared materials, and small group participation. Cultural aspects of the Arabic-speaking world are also discussed. Arabic and English will be the medium of instruction during the first six weeks of the course, after which the teacher and students communicate primarily in Arabic.

ARB 122   First Year Arabic II   **5 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6; ARB 111 minimum grade "C-"
75 lecture, 0 lab, 0 clinical, 0 other, 75 total contact hours

This is a continuation of an introduction to Arabic as a second/foreign language. It builds on the basic structures of Arabic and expands its uses in common situations of everyday communication. Students will acquire a solid grammatical base that will enhance their overall linguistic proficiency and enable them to pursue their interest in the language. The course exposes students to authentic Arabic cultural and linguistic material (audio tapes of songs, video records, poems and short stories etc).

Art   **ART**

ART 101   Introduction to Studio Art   **3 credits**
Level I Prerequisites: No Basic Skills
15 lecture, 30 lab, 0 clinical, 0 other, 45 total contact hours

This course will introduce students to a number of media and practices in studio art. Problems in drawing, design and a color medium will be given. The student will become acquainted with such basic concepts as figure/ground interaction and value relationships. Some of the materials used may be pencils, paper, acrylic paint and linoleum block printing.

ART 102   Color   **4 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6
30 lecture, 60 lab, 0 clinical, 0 other, 90 total contact hours

This studio course will use colored papers to investigate the interaction of colors, with the aim of developing awareness of how color operates in everyday experience. The objective is to increase students' sensitivity to color so that it can be used more effectively.

ART 108   Three-Dimensional Design   **4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
30 lecture, 60 lab, 0 clinical, 0 other, 90 total contact hours

This studio class will use a variety of three-dimensional materials and methods to explore the qualities inherent in good design. Stressing practice before theory, the student will create designs that explore ways of articulating form. Projects will introduce the student to a variety of materials and use of both hand and power tools.

ART 111   Basic Drawing I   **4 credits**

Level I Prerequisites: No Basic Skills
15 lecture, 75 lab, 0 clinical, 0 other, 90 total contact hours

This course is an introduction to the central problems and issues of freehand drawing. Accurate representational drawing is emphasized through a series of projects concentrating on simple objects. The course is recommended as a beginning level course before other art courses at WCC are taken. This course is recommended for students who plan to transfer to another college or university.

ART 112   Basic Design I   **4 credits**

Level I Prerequisites: No Basic Skills
30 lecture, 60 lab, 0 clinical, 0 other, 90 total contact hours

This studio course uses a broad range of exercises and materials to involve the student in two- and three-dimensional design experiences. Its objective is to develop careful seeing and analytical thinking that can be applied to all areas of the visual arts. This course is recommended for students who are planning to continue in art at WCC or transfer to another college or university.

ART 114   Painting I   **4 credits**

Level I Prerequisites: No Basic Skills; ART 101 minimum grade "B", may enroll concurrently or
                              ART 111 minimum grade "C", may enroll concurrently

30 lecture, 60 lab, 0 clinical, 0 other, 90 total contact hours

This course is an analytical approach to the fundamental problems and issues of painting, with emphasis on composition and the articulation of volumetric forms in space.

ART 120   Portrait Painting and Life Drawing   **4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; ART 101 minimum grade "C"
0 lecture, 0 lab, 0 clinical, 90 other, 90 total contact hours

The major emphasis of this course is direct observation and artistic expression of the human form using traditional media, Conte and pastel. Design and value relationships are studied, as are the superficial muscular and skeletal systems which affect the surface form. Sessions on portraiture, using the anatomical approach, are included.

ART 121   Ceramics I   **4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
30 lecture, 60 lab, 0 clinical, 0 other, 90 total contact hours

This studio class will guide the student through a series of projects in clay. The student will develop a comprehension of the different aspects of the ceramic process. The student will also develop a specific set of skills for manipulating and firing clay. The pieces created will demonstrate the different processes and stages by which a piece of clay becomes a piece of ceramic art.

ART 121A Ceramics I Part I   **2 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
15 lecture, 30 lab, 0 clinical, 0 other, 45 total contact hours

This studio class will guide the student through a series of projects in clay. The student will develop a comprehension of the different aspects of the ceramic process. The pieces created will demonstrate the different processes and stages by which a piece of clay becomes a piece of ceramic art. Students must complete both ART 121A and ART 121B to receive full credit for Ceramics I and/or transfer to a 4-year institution.

ART 121B Ceramics I Part II   **2 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; ART 121A minimum grade "B"
15 lecture, 30 lab, 0 clinical, 0 other, 45 total contact hours

This studio class will guide students and build on the basic skills developed in ART 121A. The student will develop a deeper understanding of the different aspects of the ceramic process. Students will develop a specific set of skills for manipulating and firing clay. The pieces created will demonstrate a greater familiarity with the different processes and stages by which a piece of clay becomes a piece of ceramic art. Students must complete both ART 121A and ART 121B to receive full credit for Ceramics I and/or transfer to a 4-year institution.

ART 122   Basic Drawing II   **4 credits**

Level I Prerequisites: No Basic Skills; ART 111 minimum grade "C"
30 lecture, 60 lab, 0 clinical, 0 other, 90 total contact hours

Complex problems of drawing are explored with greater emphasis placed on individual solutions. Several new media are introduced.

ART 125   Painting II   **4 credits**

Level I Prerequisites: No Basic Skills; ART 114 minimum grade "C+"
30 lecture, 60 lab, 0 clinical, 0 other, 90 total contact hours

Students will continue exploration of the fundamental problems and issues of painting. Greater emphasis is placed on individual development.

ART 127   Life Drawing I

4 credits

Level I Prerequisites: No Basic Skills; ART 111 minimum grade "C+"

30 lecture, 60 lab, 0 clinical, 0 other, 90 total contact hours

In this course, students will be provided instruction in basic approaches to drawing the nude. Quick gesture drawings will develop the movement and drama of the figure. Longer developed drawings will explore the structure of the figure. Emphasis is on analyzing the figure in terms of its simple, solid, underlying forms. This course was previously ART 140.

ART 128   Ceramics II

4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; ART 121 minimum grade "C"

30 lecture, 60 lab, 0 clinical, 0 other, 90 total contact hours

This course will further explore the fundamental problems and processes of ceramics. The student will integrate the skills learned into a series of ceramic works demonstrating a variety of processes and firing temperatures. Students will take an active role in all aspects of studio management.

ART 129   Life Drawing II

4 credits

Level I Prerequisites: No Basic Skills; ART 127 minimum grade "C"

30 lecture, 60 lab, 0 clinical, 0 other, 90 total contact hours

This course will continue instruction in basic approaches to drawing the nude. Increased proficiency in the skill and concepts introduced in Life Drawing I will be emphasized. New materials will be introduced.

ART 130   Art Appreciation

3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6

Level II Prerequisites: Computer Literacy

45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students will explore a variety of artistic media and periods of the visual arts. Through lectures, visuals, class discussions, projects and, if possible, one field trip, students will be exposed to the visual arts and how they impact our daily lives.

ART 131   Art Appreciation through Art Museum Experiences

3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6

Level II Prerequisites: Computer Literacy

45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students will explore a variety of artistic media and periods of the visual arts focusing on a direct experience in a museum or studio context. Through several field trips, lectures, discussions, projects and encounters with artists, original works of art and public art projects, students will be exposed to the visual arts and how they impact our daily lives.

ART 136   Ceramics III   **4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; ART 128 minimum grade "B"; ART 108, ART 111 or ART 112, may enroll concurrently

45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

In this course students will refine their mastery of the basic ceramic processes and develop an individual vision for ceramic art as demonstrated through acceptance of their art work into a gallery or competitive show. Skill development will focus on the interplay of surface and form. Students will work exclusively on the wheel and will be taught to make a variety of forms on a larger scale. Students will explore different techniques and styles of surface development such as image transfer, multiple firings, firings at different temperatures and different atmospheres, use of engobs, underglaze pencil and crayon, crystal glazes and lusters.

ART 143   African American Art and Culture   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course is a study of African American art and culture. It explores the political, social, and cultural effects of various events such as The Revolutionary War, The Civil War, The Great Migration, and The Civil Rights Movement on the arts. Students will be introduced to literary, artistic, and cultural achievements from the colonial era to the present.

ART 150   Monuments and Cultures   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
Level II Prerequisites: Computer Literacy
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students are introduced to architectural monuments from around the world. It focuses on the comparison of diverse architectural, religious, cultural and individual ideas. Eight to ten secular and sacred monuments will be analyzed, such as palaces, homes, cities, tombs and temples. Monuments from Europe, Asia, Middle East, Africa and the Americas are discussed to demonstrate a wide spectrum of ideas.

ART 285   Self-Management for Working Artists   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students will learn how to market themselves or others in the art and performing arts industries. Students will focus on developing interpersonal skills; preparing a portfolio of work; booking appearances or performances; preparing, analyzing and negotiating contracts; and determining the monetary value of the work of an artist. Students will explore how to manage their business while creating a multi-faceted career. Students may not earn credit in both ART 285 and MUS 285.

Astronomy   AST

AST 100   Backyard Astronomy   **1 credit**

Level I Prerequisites: Academic Reading and Writing Levels of 6
15 lecture, 0 lab, 0 clinical, 0 other, 15 total contact hours

An introduction to objects seen in the sky, with some opportunity for direct observation when weather permits. Astronomy is presented as a hobby as well as a basic science. No prior knowledge of astronomy is required.

AST 111   General Astronomy   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 3
30 lecture, 30 lab, 0 clinical, 0 other, 60 total contact hours

Astronomy 111 is an in-depth survey of the solar system and the universe. Topics covered will include: the sun, moon, and planets; Ptolemaic and Copernican systems; seasonal changes in the sky and modern ideas stemming from early beliefs in astrology. Cosmology and the structure of the universe will also be discussed. It is designed for both transfer and vocational students, no previous science is required, however some general mathematics is needed.

Auto Body Repair   ABR

ABR 111   Introduction to Auto Body Repair   4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
60 lecture, 45 lab, 0 clinical, 0 other, 105 total contact hours

This entry level, self-paced course will focus on preparing students for a career in the automotive collision repair industry. Through the use of training modules, students will learn industry standard repair procedures, damage assessment, and proper tool selection to aid in the repair of collision damaged automobiles. Additionally, students will be provided with hands-on training for body panel repair and alignment, plastic welding, MIG welding and be introduced to the automotive finishing process.

ABR 112   Introduction to Automotive Refinishing   4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
60 lecture, 45 lab, 0 clinical, 0 other, 105 total contact hours

This entry level, self-paced course establishes the foundation on which the beginning painter builds his or her knowledge for a career in the automotive refinishing industry. Students will be exposed to today's industry standard methods to include learning how to apply base and clear systems, single stage coatings, primers, and sealers. This is a "hands-on" course where students will learn panel preparation, proper mixing of sprayable materials, proper spray gun techniques and adherence to industry safety procedures. This course was previously Auto Body II: Refinishing Fundamentals.

ABR 113   Estimating and Shop Operations   4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 2; ABR 111
60 lecture, 45 lab, 0 clinical, 0 other, 105 total contact hours

This course provides students with the opportunity to develop skills in repair estimation associated with collision damaged vehicles. Skills acquired will include hand written estimation along with the use of software specifically developed for the auto body repair industry. Damage assessment, parts compilation, calculating of repair cost, and refinishing information are some of the subjects to be covered. Additionally, students will examine the nature of the body shop management team and the factors that contribute to the success and profitability of an effective, efficient operation. The title of this course was previously Applied Body Welding and Estimation.

ABR 114   Applied Auto Body Welding   2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; ABR 111 minimum grade "C"
30 lecture, 22.5 lab, 0 clinical, 0 other, 52.5 total contact hours

Students will develop and apply basic welding and MIG brazing skills associated with crash damaged panel replacement as related to the collision repair industry. Areas of study will include proper equipment selection and set up, fitment of panels to be welded, and plasma cutting procedures. Emphasis will be placed on producing I-CAR acceptable MIG welding of steel and aluminum of butt, lap, and plug welds completed in various welding positions. Student will also be introduced to MIG brazing using various grades of steel.

ABR 116   The Evolution of the Automobile   **2 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6
30 lecture, 15 lab, 0 clinical, 0 other, 45 total contact hours

This introductory course provides students with basic knowledge and skills relating to automotive design, evolution, and repair. The course combines lecture, student-conducted research, and hands-on shop training. Topics include: evolution of auto design, automotive systems, and research techniques. Students participate in lab experiences to develop skills in parts fabrication.

ABR 119   The Art of Metal Shaping   **2 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6
30 lecture, 15 lab, 0 clinical, 0 other, 45 total contact hours

This course will introduce the student to "the working of sheet metals by hand." In addition to skillful handling of tools, it is necessary for the students to possess a thorough knowledge of the properties and behavior of materials in order to insure that they move in the desired direction when worked. Areas of study will include: Sheet metal shaping with hand tools over handcrafted wood forms, over anvils, and over sand/shot bags and fabricating hand-made parts using a range of sheet metal materials with varied thickness and hardness.

ABR 123   Technical Auto Body Repair   **4 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6; ABR 111 minimum grade "C"
60 lecture, 45 lab, 0 clinical, 0 other, 105 total contact hours

Students continue to build on skills learned. Students will be exposed to aspects of body panel modification including fender sectioning, shaving door handles, door skinning and continuation of basic bumping techniques using specialty items such as hydraulic rams. Emphasis is placed on quality, craftsmanship and excellent work habits.

ABR 124   Technical Automotive Refinishing   **4 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6; ABR 112 minimum grade "C"
60 lecture, 45 lab, 0 clinical, 0 other, 105 total contact hours

This course provides students the opportunity to advance fundamental skills. Lab assignments will include the proper surface preparation of a vehicle's front clip. Operations such as proper spraying techniques for the application of metallic colors, spot repairs, color blending, single stage, base-coat clear-coat systems, tri-coat finishes, and specialty products will be covered. Basic custom paint, detailing, and advanced color mixing and matching will also be covered.

ABR 130   Custom Painting   **4 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6; ABR 112 minimum grade "B"
45 lecture, 60 lab, 0 clinical, 0 other, 105 total contact hours

This course is designed for creative students with an interest in the art of custom painting. Participants in this course learn techniques such as air brushing, pin striping, and lettering, along with the creation of custom graphics, murals and etching. Students will use special effect colors such as pearls and candies on lab assignments that were expertly developed to help participants succeed in the field of custom painting. Students must purchase their own air brush.

ABR 135   Collision-Related Mechanical and Electrical Repairs   **4 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6
60 lecture, 45 lab, 0 clinical, 0 other, 105 total contact hours

This course will introduce the student to the fundamental principles of the mechanical and electrical repair issues required to restore vehicle collision damage to pre-accident condition. Areas of study will include: suspension and steering, electrical, brakes, heat and air, cooling, fuel intake and exhaust systems, drive train, and restraint systems.

ABR 174   ABR Co-op Education I   **1-3 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6; ABR 112 and ABR 113; consent required
0 lecture, 0 lab, 0 clinical, 120 other, 120 total contact hours

In this course, students gain skills from a new experience in an approved, compensated position in the field of auto body repair. Together with the instructor and employer, students set up work assignments and learning objectives to connect classroom learning with career-related work experience. This is the first of two possible co-op experiences. Students with equivalent experience may contact the instructor for permission to waive the prerequisite.

ABR 230   Advanced Auto Body V: Advanced Auto Refinish Applications   **4 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6; ABR 124
30 lecture, 90 lab, 0 clinical, 0 other, 120 total contact hours

In this class, students utilize periods of concentrated effort on specific assignments in selected areas of the auto body repair field. Students work with instructor consultation to demonstrate development within the assigned area of general collision service, body shop organization and management or estimating automobile physical damage.

ABR 231   Project Management and Implementation in Auto Body   **4 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6; ABR 123 and ABR 124, minimum grade "C"
45 lecture, 60 lab, 0 clinical, 0 other, 105 total contact hours

Students will develop and implement a project plan for specific auto body applications. They will practice identifying project tasks, skills levels required, costs, necessary materials and the time needed to complete the project. Following the development of the project plan, students will track their progress as they apply their skills and abilities to complete these tasks in a real world atmosphere.

ABR 274   ABR Co-op Education II   **1-3 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6; ABR 174; consent required
0 lecture, 0 lab, 0 clinical, 120 other, 120 total contact hours

In this course, students gain skills from a new experience in an approved, compensated, industry-related position. Together with the instructor and employer, students set up work assignments and learning objectives to connect classroom learning with career-related work experience. This is the second of two co-op courses.

Automotive Services   **ASV**

ASV 151   Automotive Service I   **4 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 60 lab, 0 clinical, 0 other, 105 total contact hours

In this course, students will learn basic shop safety and accepted shop practices. Included in this course is the theory and operation of automotive gasoline engines - disassembly, measurements, assembly and project organization. Students will learn underhood and undercar preventative maintenance theory and practice as well as general mechanical skills. The focus of this course allows students to gain practical experience in the laboratory. This course was previously ASV 141, Automotive Mechanics I.

ASV 152   Automotive Service II   **4 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 60 lab, 0 clinical, 0 other, 105 total contact hours

In this course, students will learn basic electrical theory, use and interpret wiring diagrams and electrical testing equipment. In addition, students will learn the fundamentals of brakes, suspension and steering systems. Students will learn the skills needed to replace a number of commonly serviced electrical and chassis components. The focus of this course allows students to gain practical experience in the laboratory. This course was previously ASV 142, Automotive Mechanics II.

ASV 153   Automotive Service III   **4 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6; ASV 151 and ASV 152, minimum grade "C"
45 lecture, 60 lab, 0 clinical, 0 other, 105 total contact hours

This course continues the theory and operation of automotive electrical systems and introduces the fundamentals of the basic fuel system. Students will have the opportunity to inspect and perform basic services on electrical and fuel system components. The focus of this course allows students to gain practical experience in the laboratory. This course was previously ASV 143, Automotive Mechanics III.

ASV 154   Automotive Service IV   **4 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6; ASV 151 and ASV 152, minimum grade "C"
45 lecture, 60 lab, 0 clinical, 0 other, 105 total contact hours

This course covers the theory and fundamentals of testing and repairing fuel injection, emission control, and on-board diagnostics (OBD II) systems. This course also covers basic on-car engine repairs and diagnostic testing. The focus of this course allows students to gain practical experience in the laboratory. This course was previously ASV 144, Automotive Mechanics IV.

ASV 155   Automotive Service V   **4 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6; ASV 151 and ASV 152, minimum grade "C"
45 lecture, 60 lab, 0 clinical, 0 other, 105 total contact hours

This course covers the theory and operation of automatic and manual drivetrain systems. Topics include the basic diagnosis and repair of automatic transmissions and the basic diagnosis and repair of major drivetrain components. Students will be introduced to 4-wheel drive systems. Upon successful completion, the student will be able to service automatic transmission components as well as diagnose and replace manual drive train components. The focus of this course allows students to gain practical experience in the laboratory.

ASV 157   Repair Facility Operations and Advising   2 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6
30 lecture, 22.5 lab, 0 clinical, 0 other, 52.5 total contact hours

In this course, students will learn the skills needed to execute vehicle repair transactions in an automotive service environment. Using computer invoicing software, students will learn to prepare and execute a repair transaction following the State of Michigan guidelines. This course will also provide knowledge about mechanic and repair facility licensing requirements.

ASV 174   ASV Co-op Education I   1-3 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6; consent required
0 lecture, 0 lab, 0 clinical, 120 other, 120 total contact hours

In this course, students gain skills from a new experience in an approved, compensated position in the field of automotive service technology. Together with the instructor and employer, students set up work assignments and learning objectives to connect classroom learning with career-related work experience. This is the first of two possible co-op experiences.

ASV 251   Engine Diagnosis and Repair   2 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6; ASV 153, ASV 154 and ASV 155, mimimum grade "C"
30 lecture, 22.5 lab, 0 clinical, 0 other, 52.5 total contact hours

Students learn the theory and execution of automotive engine mechanical diagnosis and repair during this course. Students learn to apply proper technique to perform a number of significant engine repairs. Students will develop skills for assessing the condition of engines before repair. This course was previously ASV 241, Engine Repair.

ASV 252   Automatic Transmissions   2 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6; ASV 153, ASV 154 and ASV 155, minimum grade "C"
30 lecture, 22.5 lab, 0 clinical, 0 other, 52.5 total contact hours

Diagnosis of mechanical, hydraulic and electrical transmission systems is featured in this course. Hydraulic and electrical fundamentals, as they pertain to transmission operation, are included. Students will develop skills in the removal, disassembly, repair, reassembly and installation of automatic transmissions and transaxles. This course was previously ASV 242.

ASV 253   Manual Drivetrain and Axles   2 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6; ASV 153, ASV 154 and ASV 155, minimum grade "C"
30 lecture, 22.5 lab, 0 clinical, 0 other, 52.5 total contact hours

This course is designed to give an understanding of the diagnosis and repair of the automotive drivetrain systems. The course includes manual transmission, manual transaxle, differentials, transfer cases and clutch system diagnosis and repair. This course focuses on removal, service and replacement of major drivetrain components and sub-systems. This course was previously ASV 243.

ASV 254   Suspension and Steering   **2 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; ASV 153 minimum grade "C"
30 lecture, 22.5 lab, 0 clinical, 0 other, 52.5 total contact hours

In this course, students learn the theory and execution of automotive suspension and steering system diagnosis and repair. Students will apply proper techniques in performing 4-wheel alignments as well as major suspension and steering component replacement. This course was previously ASV 244.

ASV 255   Brakes   **2 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; ASV 153 minimum grade "C"
30 lecture, 22.5 lab, 0 clinical, 0 other, 52.5 total contact hours

In this course, students develop skills in diagnosing and repairing brake systems on vehicles. Instruction includes hydraulic system service and mechanical brakes system service. In addition, diagnosis and repair of anti-lock brake and stability control systems is included. This course was previously ASV 245.

ASV 256   Electrical and Electronic Systems   **4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; ASV 153 minimum grade "C"
45 lecture, 60 lab, 0 clinical, 0 other, 105 total contact hours

In this course, students learn the theory and operation of automotive electrical systems. It includes the diagnosis and repair of automotive electrical lighting, instrumentation, convenience and accessory systems. There is a focus on advanced tools and techniques used to diagnose electrical and electronic systems found in today's modern automobiles. This course contains material previously taught in ASV 246, Electrical Circuits.

ASV 257   Heating and Air Conditioning Systems   **2 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; ASV 153 minimum grade "C"
30 lecture, 22.5 lab, 0 clinical, 0 other, 52.5 total contact hours

Automotive heating and A/C systems are explored including servicing procedures and diagnostic techniques. A/C system diagnosis and repair are performed with a focus on the multiple types of control systems used in modern automobiles. The proper recovery, recycling and use of modern refrigerants are covered in this course. This course was previously ASV 247.

ASV 258   Engine Drivability   **2 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; ASV 153 and ASV 154, minimum grade "C"
30 lecture, 22.5 lab, 0 clinical, 0 other, 52.5 total contact hours

This course is designed to provide the student with the experience needed to develop skills in troubleshooting and repairing drivability problems with engine management systems. This course details the study of fuel, ignition and emission systems as they pertain to engine drivability concerns. This course was previously ASV 248, Engine Performance.

ASV 259   Diagnosis and Repair   **4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; ASV 153, ASV 154 and ASV 155, minimum grade "C"
45 lecture, 60 lab, 0 clinical, 0 other, 105 total contact hours

This course is designed to provide the student with the skills necessary to diagnose and repair late model automobiles and light trucks in a repair facility environment. There is a focus on "road going" vehicle repair and diagnosis in this course. Students will experience the various roles they will encounter in a repair facility. This course was previously ASV 249.

ASV 261   Alternative Fuels and Hybrid Vehicles   **2 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; ASV 153, ASV 154 and ASV 155, minimum grade "C"
30 lecture, 22.5 lab, 0 clinical, 0 other, 52.5 total contact hours

Students will explore the theory and application of alternative fuels and hybrid vehicles. Students will develop the skills to service alternative fuel vehicles and safely service hybrid vehicles. Students will learn about the various fuel systems and will develop the skills needed for the diagnosis and repair of fuel and electrical systems.

ASV 262   Diesel Technology   **2 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; ASV 153, ASV 154 and ASV 155, minimum grade "C"
30 lecture, 22.5 lab, 0 clinical, 0 other, 52.5 total contact hours

Students will explore the theory and application of modern light-duty diesel engines in automobile and light truck applications. Students will learn about modern diesel engines and fuel systems and will develop the skills for diagnosis and repair of fuel and electrical systems. Turbochargers, blowers and catalytic converters as well as particulate trap exhaust systems will also be covered in this course.

ASV 263   Vehicle Performance   **2 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; ASV 153 and ASV 154, minimum grade "C"
30 lecture, 22.5 lab, 0 clinical, 0 other, 52.5 total contact hours

This course provides students with the knowledge and skills necessary to diagnose, measure and improve vehicle performance on late model automobiles. The course will cover the areas of basic power train performance, chassis design/dynamics, fuel/ignition systems and basic aerodynamics including safety improvements to meet performance gains.

ASV 269   Performance Automotive   **4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; ASV 153 and ASV 154, minimum grade "C"
45 lecture, 60 lab, 0 clinical, 0 other, 105 total contact hours

Select students taking this course will continue to develop skills and gain valuable information as it relates to the completion of a project vehicle. Areas of study include drivetrain, electrical systems, suspension, brakes, steering and final safety inspections. Students will work in conjunction with the Auto Body classes to complete a project vehicle.

ASV 274   ASV Co-op Education II   **1-3 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6; ASV 174; consent required
0 lecture, 0 lab, 0 clinical, 120 other, 120 total contact hours

In this course, students gain skills from a new experience in an approved, compensated, industry-related position. Together with the instructor and employer, students set up work assignments and learning objectives to connect classroom learning with career-related work experience. This is the second of two co-op courses.

Biology   BIO

BIO 101   Concepts of Biology   **4 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

Basic principles and concepts of biology are surveyed in lecture and laboratory. Emphasis is placed on biological processes as well as practical applications including (but not limited to) major units on chemistry, cells, genetics, cellular energy, kingdoms, reproduction, ecology, evolution and laboratory skills. This course serves as an introduction to biology for non-science students and may be used as a prerequisite for other biology courses.

BIO 102   Human Biology   **4 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

This course familiarizes the student with the structures and functions of the human body, recent advances in human genetics, human health and disease, elements of a healthy lifestyle, human reproductive technology and human evolution. Students apply this information as they gain an understanding of human biology, and how they can contribute to their own health. The laboratory portion focuses on human structure and function using models, dissections, demonstrations and medical equipment.

BIO 104   Biology of Exercise   **4 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

The purpose of this course is to introduce the basic principles of exercise biology, including the physiological responses to acute and chronic exercise, the impact of heat, altitude and other environmental stressors on exercise performance and safety, and the metabolic basis for measurements of oxygen uptake during exercise. The role of each body system in strength and endurance exercise performance will be considered.

BIO 107   Introduction to Field Biology   **3 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course is an introduction to the biology of the outdoors for the beginning student. Subjects such as native trees and shrubs, wild flowers, and various animals, pond and stream life, and different Michigan terrestrial and aquatic communities will be covered. An outdoor journal and other similar activities will be stressed.

BIO 109   Essentials of Human Anatomy and Physiology   **4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; high school biology or BIO 101 or BIO 102, minimum grade "C"
45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

This course is designed to provide an introduction to the essential elements of human anatomy and physiology. It is intended for students entering programs in allied health, including radiography, medical coding and orthotics and prosthetics. This course is not appropriate for pre-nursing students.

BIO 110   Introduction to Exercise Science   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; BIO 101 minimum grade "C", may enroll concurrently
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

Students will be introduced to the field of exercise science. The areas of exercise physiology, motor control, and biomechanics will be presented. Careers open to exercise science students will be explored.

BIO 111   Anatomy and Physiology - Normal Structure and Function   **5 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; high school chemistry or CEM 090 and high school biology or BIO
                     101 or BIO 102 or BIO 161 or BIO 162; minimum grade "C" all BIO, CEM, and high school requirements
60 lecture, 45 lab, 0 clinical, 0 other, 105 total contact hours

In this course, students are provided with an intensive, in-depth introduction to the structure and function of all human body systems. The emphasis on basic physiological principles also provides students with a good base for more advanced courses. The laboratory provides dissections and experiments.

BIO 142   Introduction to Nutrition, Exercise and Weight Control   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
Corequisites: PEA 115
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course explores the relationship between nutrition and energy expenditures to body mass regulation. Part 1: Nutrition, metabolism, and energy transfer (food nutrients, optimal nutrition for exercise and sport, exercise energy utilization, and the bioenergetics of food and activity). Part 2: Body composition techniques (assessment of body fat and lean mass, obesity, weight control, modification of eating and exercise behaviors, diet practices: starvation, fad diets, optimal food intake, and psychosocial aspects of weight control: cultural and gender differences). Part 3: Physiologic considerations in total fitness (strength, anaerobic and aerobic power, aging, exercise and health).

BIO 147   Hospital Microbiology   **1 credit**

Level I Prerequisites: Academic Reading and Writing Levels of 6
15 lecture, 0 lab, 0 clinical, 0 other, 15 total contact hours

This course is a brief introduction to topics in microbiology involving human health and disease. Biological characteristics of bacteria and viruses are described and selected pathogens are discussed. The innate and adaptive defenses of the human body against microbial pathogens are described. The course also discusses appropriate use of antimicrobics. Public health efforts to control pathogens are also discussed, including vaccination and infection control.

BIO 161   General Biology I Ecology and Evolution   **4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 3; high school biology, high school chemistry or BIO 101; minimum grade "C" all BIO, CHM and high school requirements
45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

This course for biology majors provides a detailed study of the concepts and evidence in evolutionary biology, an inclusive look at modern systematics and taxonomic organizations of all living organisms, an in-depth examination of the biological features (anatomy, physiology, and behavior) of all major groups of living things, and the application of these concepts into ecological systems. Basic concepts of genetics will also be covered. This course is part of a two course sequence which serves as a comprehensive, year-long sequence for biology majors which can be completed in any order.

BIO 162   General Biology II Cells and Molecules   **4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 3; high school biology, high school chemistry or BIO 101; minimum grade "C" all BIO, CHM and high school requirements
45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

This course for biology majors provides an introduction to the basic principles of biology and their practical applications. Topics include chemistry, cell biology and energetics, classical and molecular genetics and gene expression. Sustainability issues and basic concepts from ecology and evolution. will also be covered. Students will read and discuss scientific literature, write a short paper and complete relevant lab exercises, including an inquiry-based experiment. This course is part of a two course sequence that serves as a comprehensive, year-long sequence for biology majors and other interested students.

BIO 174   Biology Co-op I   **1-3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; consent required
0 lecture, 0 lab, 0 clinical, 120 other, 120 total contact hours

Co-op courses provide students with worksite skills and experiences in an approved, compensated position related to their chosen field of study. Together with an instructor, an employer, and the Workplace Learning Center, the student determines work assignments and learning objectives to connect learning with career-related work experience. Co-op experiences are coordinated by the Workplace Learning Center in conjunction with WCC faculty and cooperating employers. Registration for cooperative education requires attendance at a co-op orientation and the instructor's prior approval.

BIO 199   Anatomical Studies   **1-3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; consent required
0 lecture, 0 lab, 0 clinical, 45 other, 45 total contact hours

This course provides individualized student experience in cadaver prosection under the supervision of WCC Biology faculty.

BIO 200   Current Topics in Biology   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

Many issues in contemporary life are related directly or indirectly to biological science. This course is an introduction to scientific inquiry into some of these issues, which may include medical advances, global warming, environmental issues, agriculture, evolution, and space biology. Some topics are pre-selected by the instructor, but others may be chosen based on student interest.

BIO 201   Physiology of Exercise   4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; BIO 109, BIO 110, or BIO 111
45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

The purpose of this course is to introduce the basic principles of exercise physiology, including the physiological responses to acute and chronic exercise, the impact of heat, altitude and other environmental stressors on exercise performance and safety, and the metabolic basis for measurements of oxygen uptake during exercise. The role of each body system in strength and endurance exercise performance will be considered as well as the effects of regular exercise on health and aging.

BIO 208   Genetics   4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; BIO 101 or BIO 102 and high school chemistry or CEM 105 or CEM 111; minimum grade "C" all BIO and CEM requirements
45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

This course gives an introduction to the basic principles of genetics and their application to viruses, bacteria, plants, fungi, and animals, including humans. Classical and molecular genetic mechanisms are covered. Laboratory experiments demonstrate genetic principles and include classical and molecular techniques. Students who have taken one year of high school chemistry with a grade of C or better may have the prerequisites waived.

BIO 212   Pathophysiology: Alterations in Structure and Function   4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; BIO 111 minimum grade "B-" and BIO 147 or BIO 237, minimum grade "C-"; BIO 147 or BIO 237, may enroll concurrently
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

The focus of this course is the application of the concepts of normal anatomy and physiology to the study of the disease processes in humans. The course includes identification of the etiology and pathogenesis of disease, alterations in normal body function, and the reaction and adaptation of the body to disease. This course was previously HSC 220.

BIO 215   Cell and Molecular Biology   4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; BIO 101 or BIO 102 and CEM 105 or CEM 111; minimum grade "C" all BIO and CEM requirements
45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

This course explores the smallest unit of living things, the cell, at the molecular and genetic level. A comparative cellular examination of the three domains provides an understanding of similarities of cells, while further study investigates differentiation and variation which leads to the diversity of life. Molecular pathways are dissected in both prokaryotic and eukaryotic cells focusing on their regulation and control. DNA technology, including genetic analysis of genomes, genetic engineering, gene therapy and cloning are also investigated. Laboratory topics focus on cell types and differentiation, enzymatic specificity and control, cellular respiration and DNA/molecular techniques.

BIO 225   Tests and Measurements in Exercise Science   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; BIO 110 and BIO 111 and BIO 201 and MTH 160, minimum grade "C"; BIO 111 may enroll concurrently
30 lecture, 45 lab, 0 clinical, 0 other, 75 total contact hours

The purpose of this course is to integrate and apply the principles learned in the prerequisite courses. It trains students to evaluate the strengths and weaknesses of scientific research in the field of exercise science, gives students practical experience and expertise with widely used measuring instruments of physical performance and body composition, and prepares students for external certification examinations for personal trainer and health/fitness instructor.

BIO 227   Biology of Animals   **4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; BIO 101 minimum grade "C"
45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

This course is an intensive study of the diversity, evolutionary and environmental relationships, structures and functions of the major animal groups. Animals are studied with an emphasis on comparative anatomy and physiology, behavior, and ecology. Lectures will incorporate interactive discussions and activities that address our current understanding of animal biology. Laboratory topics will focus on taxonomy and anatomy using models, live specimens, behavioral experiments and dissection. The title of this course was previously Zoology.

BIO 228   Biology of Plants   **4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; BIO 101 or BIO 102, minimum grade "C"
45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

This course introduces plant biology as a field and covers major topics, including: plant biochemistry, plant structure and function, plant growth, nutrition and regulation, plant evolution and classification of the major divisions focusing on flowering plants. The laboratory component emphasizes and compliments the lectures while focusing on plant cells, structure and function, photosynthesis, flowers, fruits and seeds and growth and development through a typical plant life cycle. The title of this course was previously Botany.

BIO 237   Microbiology   **4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; BIO 101 or BIO 111, minimum grade "C"
45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

The structure of microbes that have a significant impact on humans is described and their genetics introduced. The course covers the epidemiology and prevention of infectious disease as well as events involved in immunity and pathogenesis within the body. Finally, the course surveys infectious diseases of major body systems. The lab introduces basic microbiological skills.

BIO 267   Winter Field Study   **1 credit**

Level I Prerequisites: Academic Reading and Writing Levels of 6
0 lecture, 15 lab, 0 clinical, 0 other, 15 total contact hours

This course is a study of life outside in winter. Topics such as plant and animal identification, observation, adaptations, and interrelationships are discussed. This class is especially for students with no previous background in biology and/or students who enjoy being outdoors and are curious about nature in winter.

Bricklayer-Allied Craftwkr App   **BAC**

BAC 100   Labor and Trade Union History and Impacts   **1 credit**

Level I Prerequisites: Academic Reading and Writing Levels of 6
15 lecture, 0 lab, 0 clinical, 0 other, 15 total contact hours

The history and future of labor and trade unions, with particular emphasis on the International Union of Bricklayer and Allied Craftsworker, will be explored. Topics also include objectives and methods of organized labor and the legal and institutional framework of collective bargaining. This course is only available for Bricklayer and Allied Craftworker apprentices.

BAC 101   Safety Practices   **2 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

The impact of the Occupational Safety and Health Act and obtaining the required certifications will be addressed. The purpose of this course is to teach job safety practices and procedures. This course is only available for Bricklayer and Allied Craftworker apprentices.

BAC 102   Professional Skills Development   **2 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

This course is an introduction to human relation skills needed on the job site. Workplace skills such as effective communication, motivation, working with supervisors, teamwork and Equal Employment Opportunity Commission (EEOC) will be covered. This course is only available for Bricklayer and Allied Craftworker apprentices.

BAC 110   Introduction to Brick and Blocklaying Apprenticeship   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course is the introduction to brick and block laying for new apprentices. Course topics include the expectations of the apprenticeship program, role of International Masonry Institute (IMI), quality assurance and the construction process. This course is only available for Bricklayer and Allied Craftworker apprentices.

BAC 111   Introduction to Masonry Construction   **2 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

This course introduces the basic concepts of masonry construction including how and where various materials are used and the required tools and equipment. This course is only available for Bricklayer and Allied Craftworker apprentices.

BAC 112   Mortar Manipulation   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This is an introductory course in the types and physical properties of mortars. An overview of mortar materials, the manufacture of mortar and the specific manipulations of mortar are also covered. This course is only available for Bricklayer and Allied Craftworker apprentices.

BAC 120   Introduction to Tile Mechanic Apprenticeship   **1 credit**
Level I Prerequisites: Academic Reading and Writing Levels of 6
15 lecture, 0 lab, 0 clinical, 0 other, 15 total contact hours

This course is the introduction to tile setting for new apprentices. Course topics include the expectations of the apprenticeship program, role of International Masonry Institute (IMI) and the construction process. This course is only available for Bricklayer and Allied Craftworker apprentices.

BAC 121   Introduction to Tile Mechanic   **3 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course introduces the basic concepts of tile work including how and where various materials are used, adhesives and the required tools and equipment. This course is only available for Bricklayer and Allied Craftworker apprentices.

BAC 122   Basic Tile Setting   **4 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This course is an introduction to basic tile setting. Topics include surface preparation, substrate installation and cutting, setting and finishing tile. This course is only available for Bricklayer and Allied Craftworker apprentices.

BAC 210   Introduction to Blocklaying   **3 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

The course topics include common concrete masonry units, parts of a block and wall, joints, bonds, procedures, techniques and steps to basic blocklaying. This course is only available for Bricklayer and Allied Craftworker apprentices.

BAC 211   Introduction to Bricklaying   **3 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course covers the basic principles and skills used in bricklaying. Topics include types and properties of brick, structural bonds and applying mortar. This course is only available for Bricklayer and Allied Craftworker apprentices.

BAC 212   Masonry Wall Construction   3 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

The purpose of this course is to teach the fundamentals of basic masonry wall construction and applicable reinforcement concepts. Types of masonry construction and their descriptions; methods of layout; bonds; veneer, composite, and cavity walls; openings; anchoring devices; and grouting are covered. This course is only available for Bricklayer and Allied Craftworker apprentices.

BAC 213   Masonry Construction Techniques and Restoration   3 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course will cover basic repair and restoration of masonry in addition to specialty masonry construction techniques. Topics include cleaning, pointing, arches, brick pavers, structural glazed tiles, fireplaces and chimneys. This course is only available for Bricklayer and Allied Craftworker apprentices.

BAC 220   Wall Tile Installation   3 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course is an introduction to installing wall tile. Methods of installing wall tile on concrete, wood, gypsum board, glass fiber mesh and reinforced board will be covered. This course is only available for Bricklayer and Allied Craftworker apprentices.

BAC 221   Floor and Stair Tile Installation   3 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course will cover basic installation of floor and stair tile. Methods of installing tile on interior wood and cement subfloors and concrete, wood and metal stairs will be included. This course is only available for Bricklayer and Allied Craftworker apprentices.

BAC 222   Applications for Tile Installation   3 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course is an introduction to the application of tile installations. Bathtub, shower, foundation, curbs, countertop, ceiling/soffit, mantel, hearth and swimming pools tile installation will be covered. This course is only available for Bricklayer and Allied Craftworker apprentices.

BAC 223   Tile Layout, Techniques and Restoration   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course will cover tile layout, techniques and restoration. Topics will include layout design principles, renovation and repair, cleaning, caulking, quarry tile, domes, arches and columns. This course is only available for Bricklayer and Allied Craftworker apprentices.

Business Management   BMG

BMG 101   Entrepreneurship I: Finding Your Opportunity   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course is intended for those who have aspirations of creating business opportunities from scratch whether they are an inventor, artist, employee, manager, or entrepreneur. Students assess their skills, attitudes, and behaviors related to entrepreneurial and innovative mindsets. Concepts and exercises focus on practical and repeatable processes and applications that identify unmet customer needs in order to generate ideas that become an innovation of value. The title of this course was previously The Business of Your Career.

BMG 109   Entrepreneurship II: Starting Your Business   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students will experience real-world and hands-on activities needed to start a business. Talking with customers, partners, competitors, and advisors will provide valuable input as students explore the various facets of a business and how they interact to produce a working business model. Students completing this course will be able to answer the question, "Will anyone other than you want your product or service?", and be well-positioned to write a business plan. This title of this course was previously Starting Your Business.

BMG 111   Business Law I   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course involves text and case study of the general laws applicable to business, covering the nature of law, courts and court procedures, contracts, real and personal property, wills, trusts, and negotiable instruments. This course is appropriate for students intending to transfer. Students are expected to make use of computer technologies to learn in both individual and collaborative environments using the Internet.

BMG 130   Investment Strategies   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This is a course designed to help existing or potential investors keep abreast of investment opportunities in today's changing financial world. This course presents current information on stock and bond markets, commodities, and real estate. Students are taught the mechanics of investing and how to analyze risk and return, financial statements, annual reports, financial services reports, mutual funds, and relate to the current tax structure. Students learn to read The Wall Street Journal and utilize the information to evaluate investments.

BMG 140　　Introduction to Business　　　　　　　　　　**3 credits**

Level I Prerequisites:　　Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course covers functions, objectives, problems, organization, and management of modern business. Also covered are the free-enterprise system of business-economic activity and the impact of the consumer and governmental forces upon the system. Students develop insight into the vital role of the administrative function in our economy as a whole and in the operation of a single business unit. A practical orientation is offered in the career opportunities available in business and industry.

BMG 150　　Labor-Management Relations　　　　　　　　**3 credits**

Level I Prerequisites:　　Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

The purpose of this course is to provide students with an understanding of management and labor roles in society and the impact of their relationship on company policies and practices. Students will acquire a basic knowledge of collective bargaining, negotiations, and a framework for analysis of labor relations problems.

BMG 155　　Business on the Internet　　　　　　　　　　**3 credits**

Level I Prerequisites:　　Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course explores ways businesses are leveraging Internet technologies and tools in marketing and operational strategies. Students will learn the history of the Internet and the evolution of e-commerce. The course will cover terms and strategies related to online retailing, advertising, social media, business operations, new ventures and emerging technologies.

BMG 160　　Principles of Sales　　　　　　　　　　　　**3 credits**

Level I Prerequisites:　　Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

The purpose of this course is to provide students with an understanding of the responsibilities and ethics of a salesperson, effective prospecting skills, preparing customer presentations, handling customer objections, closing a sale, and understanding the basics of a business to business contract.

BMG 174　　BMG Co-op Education I　　　　　　　　　　**1-3 credits**

Level I Prerequisites:　　Academic Reading and Writing Levels of 6; consent required
0 lecture, 0 lab, 0 clinical, 120 other, 120 total contact hours

In this course, students gain skills from a new experience in an approved, compensated, business-related position. Together with the instructor and employer, students set up work assignments and learning objectives to connect classroom learning with career-related work experience. This is the first of two co-op courses.

BMG 180   Introduction to Logistics and Supply Chain Management   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

The course covers the concepts, processes, and strategies of Supply Chain Management (SCM), which involves the coordination of suppliers, manufacturers, distributors, and retailers to ensure that products and services are available to the final consumer in a timely and cost-effective fashion while maintaining the service level customers demand. Topics include 21st Century supply chains and network designs, procurement and manufacturing, integrated operations planning, inventory management, transportation operations, warehousing and materials handling, relationship management, as well as operational and financial performance measures. Attention is paid to aligning supply chain strategies with corporate goals, analyzing current ethical and sustainable issues, and employing various analytical techniques used in solving supply chain-related problems.

BMG 200   Relationship Skills in the Workplace   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students are introduced to human relations skills (interpersonal, intrapersonal and leadership) necessary to build and manage cooperative relationships that result in a positive, productive work environment. Students will explore the human relations aspect of management responsibility as it affects employee attitudes, morale, and performance. Emphasis is on relationships among individuals and/or small groups with problem solving activities that relate course material to human relations in business. The title of this course was previously Human Relations in Organizations.

BMG 201   Entrepreneurship II - Market Planning   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; BMG 109 minimum grade "C-", may enroll concurrently or equivalent business experience
Level II Prerequisites: CIS 099 with grade "P"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

Students learn how to identify a target market that provides a continuous competitive advantage to the small business owner by performing market research. Students will complete a plan of marketing which includes an evaluation of profit potential. This course was previously BMG 292.

BMG 205   Creating the Customer Experience   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students learn how to create a highly-evolving customer experience in order to build customer loyalty, word-of-mouth customers, and in turn, organizational success. Students apply the core concepts to develop customer experience strategies with a focus on enhancing the quality of the interactions between the service provider and the client/customer. Finally, students refine their personal skills needed to be successful in our constantly changing and customer-centric business environment.

BMG 206   Retail Principles and Practices   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course covers the managing, marketing, selling, promoting and distributing of retail goods and services. Students will learn the conceptual, theoretical and strategic framework of fundamental retail management principles blended with the practical applications of retailing policies, methods and procedures. Students will learn to apply their understanding of the retailing environment and evaluate the financial implications of their retail decisions to prepare them for a career in the retail industry.

BMG 207   Business Communication   **3 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

By studying the principles, processes and strategies underlying effective business communication, students will develop career-enhancing oral, written, and non-verbal skills. Emphasis is placed on planning, creating and transmitting business information within a variety of business situations found in the global marketplace. Students will prepare routine correspondence, reports, resumes, and formal business presentations.

BMG 209   Entrepreneurship III - Running and Growing Your Business   **3 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6; BMG 109 minimum grade "C-", may enroll concurrently
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

Students with a solid business model or operating business will learn, through the development of a business plan, how to build a solid foundation for running and growing their business. The focus of the course will be on the financial, marketing, and operational functions within a business necessary for sustained growth and success. This course contains material previously taught in BMG 102.

BMG 211   Merchandising and Inventory Management   **3 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In most retail operations, inventory is the largest asset, and managing this investment is critical to increasing sales and profitability and providing capital for expansion. Students will learn the practices for determining product assortments, acquiring/replenishing stock and reducing excessive inventory. Supply chain, store layout and visual display principles will also be addressed. Finally, students will learn to perform the calculations related to all aspects of inventory management.

BMG 215   Planning an E-Commerce Business   **3 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6; BMG 155 minimum grade "C-"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students prepare an E-commerce business plan suitable for presentation to decision makers. This includes an examination of the strategies used by management to develop and implement an E-commerce site, the process involved in planning and maintaining the Web site, attracting and maintaining customers, and measuring success. Students who have equivalent work experience may contact the instructor to waive the prerequisites.

BMG 220   Principles of Finance   **3 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6; ACC 111 or ACC 122
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course surveys the basic concepts of finance that provide the foundation for successful real world financial management practices. Emphasis is on financial tools required to operate a business. Included is the role of the economy and its effect on interest rates, commercial banking practices, commercial credit, cash management, lending practices, financial statement analysis, time value of money, forecasting, budgeting, capital budgeting, sources of financing, lease vs. purchase, leverage, inventory controls, valuation of rates of return, investment banking, international finance, and bankruptcy. The course is intended to prepare students for advanced studies in finance and practical application of financial principles.

BMG 226   Transportation Management   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students will develop knowledge, skills and comprehension of transportation and logistics management, since transportation expense often represents one of the largest single costs faced by a company. It will cover how transportation moves materials, products, information, and finances through the global supply chain, increases a company's competitive advantage, and differentiates an organization from the competition. Students will learn how to analyze a firm's supply chain, develop a broad transportation strategy, create a detailed implementation plan, and then evaluate the results to make further improvements.

BMG 227   Purchasing and Supply Management   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 4 or MTH 125 or MTH 160, minimum grade
                               "C"; CIS 100 or CIS 110
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students are provided with an overall view of modern purchasing theory and the issues related to strategic and operational purchasing and supply management. Introduced are a number of important theories, terminology and methods for purchasing. Students will learn to identify, analyze, and plan the purchasing work from original planning through delivery of finished products: purchasing, inventory control, receiving, stores, productions control, traffic, and materials handling. Students will practice their skills in a number of purchasing-oriented activities.

BMG 230   Management Skills   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course covers management concepts and principles that supervisors and managers use in daily activities. Students will acquire the skills needed to plan, organize, staff, and control an operation. Structured and creative approaches to problem-solving will be explored. This course contains material previously taught in BMG 208 and BMG 230.

BMG 240   Human Resources Management   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course covers essential human resources activities that must be managed in any organization: employee retention, staffing, compensation, job evaluation, performance management, collective bargaining, safety, employee rights, benefits, pensions, and employment laws.

BMG 241   Innovation: Process and Application   **1 credit**

Level I Prerequisites: No Basic Skills
15 lecture, 0 lab, 0 clinical, 0 other, 15 total contact hours

Students will use a process to develop knowledge and skills needed for an innovative mindset. Innovation, as a process, is useful to inventors, artists, entrepreneurs, employees, and managers. Concepts and exercises focus on key, practical, and usable processes and applications. Topics include: identifying and addressing unmet needs of a user group and generating ideas that become an innovation of value.

BMG 250   Principles of Marketing   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students will gain an understanding of marketing strategy, segmentation, differentiation, buyer behavior and emerging technology tools for marketers. The course also focuses on marketing decisions, with emphasis on the key strategy decisions in each area of the marketing mix: product, place, promotion and pricing.

BMG 265   Business Statistics   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 4 or MTH 125 or MTH 160, minimum grade "C"; CIS 100 or CIS 110
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course introduces the concepts of statistics and their application to business decisions. Topics include elements of data set description, probability, random variables, sampling distributions, mean and proportion estimation, hypothesis testing, and regression and correlation analysis. Emphasis is on the application of appropriate statistical methods to analyze data for the purpose of making sound business decisions.

BMG 273   Managing Operations   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course introduces students to the fundamental processes of managing and controlling a variety of operations. It includes concepts in operations management that are recognized as important factors in business such as work processes, project management, scheduling and inventory management, quality tools, managing human resources on projects and in teams, and customer management. It is recommended that students have basic supervision knowledge obtained from previous coursework or work experience.

BMG 274   BMG Co-op Education II   1-3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; BMG 174; consent required
0 lecture, 0 lab, 0 clinical, 120 other, 120 total contact hours

In this course, students gain skills from a new experience in an approved, compensated, business-related position. Together with the instructor and employer, students set up work assignments and learning objectives to connect classroom learning with career-related work experience. This is the second of two co-op courses.

BMG 275   Business and Supply Chain Analytics   4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students are introduced to the decision-making process and related decision-support tools that managers use on a daily basis. Students will gain the managerial, technical and analytical skills needed to gather, organize and analyze data used to describe and keep track of departmental as well as company performance. Through the use of scenario planning, computer modeling, and business related simulations, students will gain practical experience in anticipating the impact of decisions and applying sound reasoning when creating intelligent solutions to realistic business problems.

BMG 279   Performance Management   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course is designed to provide the student with the human performance skills needed to develop people in an environment that recognizes that they are an organization's most valuable resource. Through the use of skill-building exercises and case analysis, the learner will develop knowledge and skills to plan, monitor, measure, motivate, improve and reward performance.

BMG 291   Project Management   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

Students will learn and utilize the Project Management Methodology along with the general functions of management. Using project management software, team strategies, business applications and effective communication controls, students will plan and manage projects. The course will cover the following project management knowledge areas as outlined by the Project Management Institute: integration management, scope management, time management, cost management, human resources management, and communications management.

BMG 295   Supply Chain Field Studies   **2 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; BMG 205, BMG 206, BMG 211, BMG 230 and BMG 275, minimum grade "C" all BMG courses; BMG 205, BMG 230 and BMG 275, may enroll concurrently
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

Students will apply their knowledge of retail and supply chain management by conducting a business analysis which integrates the concepts, principles and practices learned in prerequisite courses. Students will analyze the environment, operations, marketing, and personnel aspects of a business. They will describe the findings in a final report that demonstrates an understanding and real-world application of managing in retail and supply chain organizations. The title of this course was previously Capstone: Retail Management.

Business Office Systems   BOS

BOS 101A Introduction to Keyboarding   **1 credit**

Level I Prerequisites: No Basic Skills
15 lecture, 0 lab, 0 clinical, 0 other, 15 total contact hours

This course is the first in a series of three keyboarding courses. This course teaches students to keyboard by touch and develop speed, accuracy, and proper techniques on the alphabetic keys. This course is offered only in a self-paced format.

BOS 101B Intermediate Keyboarding   **1 credit**

Level I Prerequisites: No Basic Skills
15 lecture, 0 lab, 0 clinical, 0 other, 15 total contact hours

This course is the second in a series of three keyboarding courses. It is designed for students who have completed BOS 101A or who can key a minimum of 24 wpm. Students increase their speed and accuracy, improve their technique, and learn to touch key the number and symbol keys. Students are evaluated early and may be placed in BOS 101A or BOS 101C based on the results of the evaluation. This course is offered only in a self-paced format.

BOS 101C Advanced Keyboarding   **1 credit**

Level I Prerequisites: No Basic Skills
15 lecture, 0 lab, 0 clinical, 0 other, 15 total contact hours

This course is the third in a series of three keyboarding courses. It is designed for students who have completed BOS 101B or who can key a minimum of 33 wpm. Students increase their speed and accuracy, improve their technique, and learn to touch key the number and symbol keys. Students are evaluated early in the course and may be placed in BOS 101A or BOS 101B based on the results of the evaluation. This course is offered only in a self-paced format.

BOS 106   Electronic Planning, Sharing and Organization   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this class, students explore the usage of a note-taking and information-management program that allows users to capture ideas and store information electronically. Students will also be introduced to the benefits of cloud computing as a means to store, organize and share information with others and will learn effective collaboration techniques for working on business, school, or personal projects. Topics include Windows fundamentals, file and folder management, searching for and evaluating information found on the internet and using email. Software topics covered in this course include Microsoft Excel, OneNote, PowerPoint and Word.

BOS 107   Office Administration I   **4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
Level II Prerequisites: BOS 101C minimum grade "C" or 3 minute typing test minimum score 33 GWAM
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This course is useful to students entering the world of business for the first time, as well as those workers currently employed in business-related occupations. In this course, students learn a variety of general job functions which will assist, inform, and train them for office careers. These include processing of office mail, handling telephone and faxing services, records management, and proofreading and editing skills. Students learn job-hunting procedures and prepare for employment in the clerical field through an understanding of the changing business world. To be successful in this class, students should be familiar with Windows and keyboard at least 30 gross words a minute.

BOS 157   Word Processing and Document Formatting I   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course teaches word processing and document formatting using Microsoft Word. Skills include formatting and editing documents; using grammar and thesaurus functions; applying character, paragraph, and section formatting; preparing headers and footers; using file management procedures; preparing labels and envelopes; and formatting columns. The application of word processing concepts and functions to current business environments is stressed. Students should be familiar with Windows and have keyboarding skills of at least 25 wpm.

BOS 174   BOS Co-op Education I   **1-3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; Eight credits in BOS discipline, minimum 2.0 GPA; consent
                                required
0 lecture, 0 lab, 0 clinical, 120 other, 120 total contact hours

In this course, students gain skills from a new experience in an approved, compensated, business-related position. Together with the instructor, the employer, and the co-op placement office, students determine work assignments and learning objectives to connect classroom learning with career-related work experience. This is the first of two-co-op courses.

BOS 175   Medical Office Communication   **2 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

This course is intended for medical assisting students. In this course, students develop their listening skills and apply strategies to effectively deal with psychological and cultural barriers to communication and learn to gather information from patients in a non-threatening way. Students also learn to write reports and letters and to communicate sensitive healthcare information in other written, electronic, visual and verbal form to doctors, patients, pharmacies, insurance companies, and governmental agencies. Issues of privacy and security of patient information will also be covered.

BOS 182   Database Software Applications   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course teaches database concepts and applications using Microsoft Access. Skills and concepts include creating databases; creating and customizing tables and forms; creating, formatting, and enhancing reports; querying and maintaining databases; enhancing forms; and filtering data. Applying database concepts, design, and functions used within business environments is emphasized. Students should be familiar with Windows and have keyboarding skills of at least 25 wpm.

BOS 184   Spreadsheet Software Applications I   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 2

45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students are taught introductory spreadsheet concepts and applications using Microsoft Excel. Skills and concepts include creating, formatting and editing a worksheet; entering formulas and using Excel functions; preparing charts; creating templates, workbooks, and saving a workbook as a Web page. Applying spreadsheet concepts and functions to business environments is stressed. Students should be familiar with Windows and have keyboarding skills of at least 25 wpm. This course contains material previously taught in BOS 183.

BOS 185   Medical Computer Skills and Electronic Health Records   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students explore the ways in which modern computer technology such as electronic health records (EHRs), personal health records (PHRs), and health information management systems are being used to improve patient care and save costs. Students will learn criteria for selection of an EHR system and strategies for the non-disruptive transitioning and implementation of EHRs into existing medical office systems. Students will also gain hands-on practical experience in the use of an EHR system. Laws and ethical issues affecting the privacy of patient information will be examined and best practices in the handling of healthcare and patient data will be discussed.

BOS 206   Personal Management Application and Internet Resources   **2 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

This course provides an introduction to the operational and technical aspects of communication using Microsoft Outlook and Internet resources. Topics covered include email, contact and task management, electronic scheduling and using the Internet for common business and social media interactions. Students should be familiar with Windows and have keyboarding skills of at least 25 wpm. The title of this course was previously Scheduling and Internet Office Applications.

BOS 207   Presentation Software Applications   **2 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

In this course, students are introduced to presentation software concepts and applications using Microsoft PowerPoint in a Windows operating system environment. Skills and concepts include creating, editing, formatting, and enhancing presentations; adding graphics and multimedia; using embedded elements to enhance a slide show; and delivering presentations. Applying presentation software concepts and functions to business environments is stressed. Students should be familiar with Windows and have keyboarding skills of at least 25 wpm.

BOS 208   Desktop Publishing for the Office   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course will prepare students to apply basic publishing skills while creating flyers, newsletters, brochures, letterhead, business cards, and other publications. The course will enable the student to create a publication from scratch or use a template with a business information set. Students will create, manage, revise and distribute publications. Students must be familiar with Windows and have keyboarding skills of at least 25 wpm.

BOS 210   Medical Transcription   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; HSC 101
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This medical transcription course is for students who have some proficiency in keyboarding and medical terminology. Emphasis is placed on the correct use of medical terms; the correct application of writing rules including capitalization, word usage, and punctuation; the efficient use of hardware including a computer, printer, and transcription machine; the formatting of typical medical documents; the use of medical resources; and the knowledge of current employment opportunities in medical transcription.

BOS 211   Introduction to Paralegal Studies   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students receive an overview of the nature of paralegal careers, with a look at the roles, opportunities, responsibilities and problems encountered. The student is introduced to areas of the law in which the paralegal/legal assistant may work. Ethical considerations are addressed and legal terminology will be introduced and emphasized.

BOS 223   Medical Office Procedures   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 15 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students are introduced to the professional characteristics of and legal and ethical standards for the medical assistant. Using medical administrative software, students simulate situations where they input patient information, schedule appointments, and handle billing. This course addresses front office, administrative skills necessary for the medical assistant.

BOS 224   Medical Office Insurance and Billing   **4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; HIT 101 minimum grade "C"
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This course is an introductory billing course for those interested in a career in the medical office as a medical assistant, receptionist, or insurance biller/coder. The course covers the fundamentals of health insurance, including plan options, carrier requirements, state and federal regulations, selecting relevant information from source documents, accurately completing claim forms, and coding diagnoses and procedures. The student will be introduced to a variety of medical insurers, including Medicare, Medicaid, Blue Cross/Blue Shield, Tricare, CHAMPVA, Workers' Compensation, and other third-party payers. Students should have basic computer and data entry skills. Medical software will be utilized to complete billing and coding exercises.

BOS 225   Integrated Office Applications   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; BOS 157, BOS 182 and BOS 284, minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students receive practical study and advanced training in Microsoft Office. Emphasis is given to advanced office practice in repetitive correspondence, letter merging, general office and presentation forms, statistical documents, filing and sorting databases, electronic mail, and basic financial documents. Application of advanced Microsoft Office concepts and functions to business environments is stressed. Students must be familiar with Windows and have keyboarding skills of at least 25 wpm.

BOS 230   Electronic Forms Design   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; BOS 257 minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, users will learn how to prepare documents including forms for end-user distribution. User will create, edit, and distribute PDF documents. Users will also create business forms using LiveCycle Designer, Microsoft Word, and Microsoft InfoPath.

BOS 250   Office Administration   **4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; BOS 157
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students will be introduced to the functions and roles of technology in a business office environment. Emphasis is placed on the expanding duties of an administrative professional such as time management, business composition, human relations skills, teamwork, office environment, and multi-cultural business etiquette. Importance is placed on verbal and written communication. Students develop effective job-hunting techniques and a portfolio to prepare for employment in the administrative field. To be successful in this class, students should be familiar with Windows and keyboard at least 25 wpm. This course contains content previously taught in BOS 107. The title of this course was previously Office Administration II.

BOS 257   Word Processing and Document Formatting II   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; BOS 157
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This is the second of two courses in word processing and document formatting. Students are introduced to advanced word processing formatting and functions such as macros, styles, templates, graphics, Web pages, versions, forms, WordArt, Draw, outlines, indexes, and mail merges. The formatting of memos, letters, reports and specialized documents according to current business standards is emphasized throughout the course. Students should be familiar with Windows.

BOS 274   BOS Co-op Education II   1-3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; BOS 174; consent required
0 lecture, 0 lab, 0 clinical, 120 other, 120 total contact hours

In this course, students gain skills from a new experience in an approved, compensated, business-related position. Together with the instructor, the employer, and the co-op placement office, students determine work assignments and learning objectives to connect classroom learning with career-related work experience. This is the second of two-co-op courses.

BOS 284   Spreadsheet Software Applications II   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 2; BOS 184 minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This is the second of two courses in spreadsheet applications. Advanced techniques using Microsoft Excel in the work environment will be stressed. Skills and concepts include working with named ranges and structured references, using auditing tools to analyze data, creating scenarios, creating data maps and pivot tables, creating and using macros, and using workbook protection. Group participation in solving complex formulas and functions is part of this course. This course contains material previously taught in BOS 183.

Chemistry   CEM

CEM 090   Introductory Chemistry   4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 3
45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

This course offers a basic exposure to the general concepts of chemistry and provides an introduction to best practices and procedures in a chemical laboratory. Students with no background in high school chemistry or students wishing to improve their chemistry background, should take this class before taking CEM 105 or CEM 111. This course contains material previously taught in CEM 057 and CEM 058.

CEM 102   Chemistry for Elementary Teachers   4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

This course is designed for students who are planning to teach in elementary schools. It outlines the basic concepts of chemistry such as atomic structure, matter, energy and bonding. The laboratory portion emphasizes the discovery approach using simple equipment and chemicals that are easy to obtain and safe to use around grade school children.

CEM 105   Fundamentals of Chemistry   4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 3; high school chemistry or CEM 090, minimum grade "C"
45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

Students with an interest in nursing or other health related areas, or needing a general science elective, find that this broad survey of the major topics in chemistry including states of matter, physical and chemical changes, stoichiometry, atomic and molecular structure, gases and gas laws, electronic structure, periodic properties, chemical bonding, energy and heat, intermolecular forces, acids/bases and redox reactions
meets the requirements of their program.

CEM 111　　General Chemistry I　　　　　　　　　　　　　　　　**4 credits**

Level I Prerequisites:　Academic Reading and Writing Levels of 6; MTH 169 or higher (excludes MTH 178 and 181); high school chemistry (taken within last 5 years) or CEM 090 (taken within last 5 years), minimum grade "C" all CEM, MTH and high school requirements

45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

This course covers the major topics in chemistry including states of matter, physical and chemical changes, stoichiometry, atomic and molecular structure, chemical bonding, thermochemistry and intermolecular forces. It is intended for students in a professional or pre-professional curriculum. Students need intermediate algebra skills to be successful in this course.

CEM 122　　General Chemistry II　　　　　　　　　　　　　　　**4 credits**

Level I Prerequisites:　Academic Reading and Writing Levels of 6;CEM 111 (within past 5 years) and MTH 176, both minimum grade "C"

45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

This course is the second of a two-course sequence in general chemistry for pre-professional and liberal arts students. This course develops the concepts of chemical kinetics, chemical equilibrium, chemical thermodynamics and electrochemistry. The ability to solve mathematical equations involving logarithms and exponentials is essential to success in this course.

CEM 140　　Organic Biochemistry　　　　　　　　　　　　　　　**4 credits**

Level I Prerequisites:　Academic Reading and Writing Levels of 6; CEM 105 or CEM 111, minimum grade "C"

45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

This course is an introduction to both organic chemistry and biochemistry for nursing and other health services students. Major topics covered are the structure and functional groups of organic compounds, structures of biological molecules, mechanism of enzyme-catalyzed reactions, metabolism and bioenergetics.

CEM 211　　Organic Chemistry I　　　　　　　　　　　　　　　　**4 credits**

Level I Prerequisites:　Academic Reading and Writing Levels of 6; CEM 122 minimum grade "C"

45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

This course is the first in a two-semester sequence in organic chemistry. It provides students with a background in nomenclature of organic compounds, stereochemistry, preparation and reactions of aliphatic and aromatic compounds. Students also practice the preparation and handling of organic compounds in the laboratory.

CEM 222　　Organic Chemistry II　　　　　　　　　　　　　　　**4 credits**

Level I Prerequisites:　Academic Reading and Writing Levels of 6; CEM 122 and CEM 211, minimum grade "C"

45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

This course continues the exploration of nomenclature, stereochemistry, preparations, and reactions of organic and biological compounds. Students will apply these techniques to the synthesis and spectroscopic analysis of complex organic compounds. Laboratory work includes hands-on spectroscopic analysis of various organic compounds.

Child Care Professional   CCP

CCP 101   Child Development   3 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course provides a general overview of the physical, social, emotional and intellectual development of the child from conception to adolescence with emphasis on the young child. It examines the environmental, ethnic and familial factors that make for group differences and individuality of growth, and reviews current research in these areas.

CCP 113   Health, Safety and Nutrition for Child Care   3 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6; CCP 101 minimum grade "C" and HSC 131 with grade "P"; both courses may enroll concurrently
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

Best practices in health, safety and nutrition are presented. Students develop specific competencies in these areas including establishing and maintaining a healthy, safe child care program, planning nutritious meals and snacks, and teaching children and their parents about health, safety and nutrition. Communicable diseases, government funded child/family food and nutrition programs, playground and toy safety and resources for the child care provider are included.

CCP 122   Essentials of Early Care and Education - I   4 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6; consent required

Level II Prerequisites: The national CDA certificate requires reflective assignments on current work with children for a total of 480 hours of direct work with children ages 5 and younger.
Corequisites: CCP 132
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This course provides an overview of the basic components of early child care and education. Students gain knowledge of six of the CDA competency standards: safety, health, learning environment, families, program management and professionalism.
Enrollment restrictions per state child care regulations. Student must be 18 years of age with a high school diploma/GED or concurrently enrolled in a state approved vocational high school child care program to register for this course. Concurrent enrollment in CCP 132 is required. The title of this course was previously Child Development Credentialing I.

CCP 123   Essentials of Early Care and Education - II   4 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6; consent required
Corequisites: CCP 133
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This course provides an overview of the essential elements of child care and early education and provides part of the formal training for the national child care credential, the Child Development Associate (CDA). Seven of the CDA functional areas are included: physical, cognitive, communication, creative, self, social, and guidance. Students must be at least 18 years of age with a high school diploma/GED or be concurrently enrolled in a state approved vocational high school child care program to register for this course. The national CDA certificate requires reflection on assignments on current work with children. Concurrent enrollment in CCP 133 is required. The title of this course was previously Child Development Credentialing II.

CCP 124   CDA Assessment Preparation   2 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6; CCP 122, CCP 123, CCP 132 and CCP 133; consent required
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

This course helps candidates for the Child Development Associate (CDA) national child care certificate prepare for assessment. Students will receive assistance with preparing the Professional Portfolio and preparing for the Verification Visit by the CDA Specialist and the CDA exam. Students must have completed 120 clock hours of approved instruction in the 13 CDA functional areas and eight subject areas required by the CDA Council and submit proof of this training to enroll.

CCP 132   Child Development Practicum I   1 credit
Level I Prerequisites: Academic Reading and Writing Levels of 6; consent required
Corequisites: CCP 122
0 lecture, 0 lab, 0 clinical, 120 other, 120 total contact hours

In this course, students work in a licensed child care facility for a minimum of 120 clock hours. Placement is not provided by the college. Students will demonstrate competence in the CDA functional areas: safety, health, learning environment, working with families, program management and professionalism during a supervised work experience. Documentation of 120 clock hours of experience in a licensed child care center with infants and toddlers or preschoolers, or licensed family child care home is required. Observations are completed at the work site by a practicum instructor during regular hours of operation using CDA standards. Concurrent enrollment in CCP 122 is required.

CCP 133   Child Development Practicum II   1 credit
Level I Prerequisites: Academic Reading and Writing Levels of 6; consent required
Corequisites: CCP 123
0 lecture, 0 lab, 0 clinical, 120 other, 120 total contact hours

In this course, students work in a licensed child care facility for a minimum of 120 clock hours. Placement is not provided by the college. Students will demonstrate competence in the CDA functional areas: physical, cognitive development, communication, creativity, self, social and guidance during a supervised work experience. Documentation of 120 clock hours of experience in a licensed child care center with infants and toddlers or preschoolers, or licensed family child care home is required. Observations are completed at the work site by a practicum instructor during regular hours of operation using CDA standards. Concurrent enrollment in CCP 123 is required.

CCP 160   Foundations of Child Care and Early Education   3 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6; CCP 101 minimum grade "C", may enroll concurrently
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course provides an overview of the theories and philosophies that have shaped modern child care and early childhood education programs. A history of the field, current issues and future developments in the profession are covered. State licensing requirements, national accreditation standards, state and national curriculum standards, and quality indicators are emphasized in relationship to establishing and operating programs for children from birth through age twelve.

CCP 200   Working with Families in a Diverse Society   3 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6; CCP 101 minimum grade "C"

45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course explores the parent - professional partnership. Emphasis is on increasing knowledge and skills for working with diverse families, family differences and functions, communication strategies, and methods for increasing parent involvement in facilitating optimal child development. Advocacy on behalf of children and families, and resources for the professionals are also included. A supervised practicum is a prerequisite for this course. This title of this course was previously Working with Parents.

CCP 204   The Developing Professional in Early Childhood Education   **2 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; CCP 200 or CCP 220, minimum grade "C"; ENG 226 minimum grade "C"; MTH 149 minimum grade "C"; 45 Early Childhood Education program credits; consent required
Corequisites: CCP 205
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

Students use a reflective-inquiry approach to understand how child development theories and evidence-based practices are used as the basis of quality early childhood education programs. Skills in observation, understanding adult-child interactions, child guidance, diversity, curriculum content areas and classroom environment are explored.

CCP 205   Practicum for the Developing ECE Professional   **1 credit**

Level I Prerequisites: Academic Reading and Writing Levels of 6; CCP 101 minimum grade "C"; consent required
Corequisites: CCP 204
0 lecture, 0 lab, 0 clinical, 36 other, 36 total contact hours

This course provides an introduction to the early childhood education classroom setting. Students volunteer in a pre-approved early childhood classroom under the guidance of a master teacher for three hours a week for a minimum of 12 weeks during the semester (minimum of 36 clock hours).

CCP 209   Curriculum for Young Children   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; CCP 101 minimum grade "C"; CCP 132 and CCP 133
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course provides an overview of curriculum for young children from birth to age twelve with emphasis on two through five years old. The focus is on developing multi-cultural/anti-bias curriculum activities that are developmentally appropriate for various ages and stages of development. Experience with children in a group setting during the semester is required. Students with a National CDA certificate may request an override for CCP 132 and CCP 133.

CCP 210   Child Guidance and Classroom Management   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; CCP 101 minimum grade "C"; CCP 132 and CCP 133
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This comprehensive course focuses on child guidance and classroom management for the child care provider and adults working with preschool and elementary school aged children in educational and recreational settings. Emphasis is placed on the social and emotional development of children from birth through age 12 and developmentally appropriate guidance strategies. This course meets Positive Behavior Support Standards for the Michigan Department of Education (2000). Current work experience with children age 12 or younger is required. Students with National CDA certificate may request an override for CCP 132 and 133. This course was previously CCP 110.

CCP 211   Administration of Child Care Programs   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; CCP 113, CCP 122, CCP 123 and CCP 209, minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course meets Michigan's child day care administration requirement for program directors and site supervisors. The basis of effective program management is reviewed. Students acquire knowledge of policies relating to children, staff, parents and center operations. Students write policies and procedures required of a program director in Michigan and collect resources needed by an effective program manager. Students who possess the National Child Care credential (CDA) or other professionals who qualify for an administration course should contact the instructor for permission to register.

CCP 218   Advanced Child Care Seminar   1 credit

Level I Prerequisites: Academic Reading and Writing Levels of 6; CCP 209 minimum grade "C"; Completion of 50 credit hours in
CCP program requirements; consent required
Corequisites: CCP 219
15 lecture, 0 lab, 0 clinical, 0 other, 15 total contact hours

This course focuses on leadership and curriculum skills needed as a director or lead teacher in a child care center. Students refine skills in developing and evaluating sequences of developmentally appropriate learning activities for young children. Students plan and execute a leadership project. Confirm eligibility and suitable employment in a licensed child care center with the program adviser prior to enrolling.

CCP 219   Advanced Child Care Practicum   2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; CCP 209 minimum grade "C"; Completion of 50 credit hours in
CCP program requirements; consent required
Corequisites: CCP 218
0 lecture, 0 lab, 0 clinical, 240 other, 240 total contact hours

During this supervised practicum experience, students assume the lead teacher role for a minimum of two weeks. Students implement planned activities, refine curriculum planning and evaluation skills, develop skills in self-assessment and program evaluation, and keep a reflective teaching journal. Employment in a licensed child care center is required. Students must meet with a program advisor prior to enrolling in the course.

CCP 220   Development and Care of Infants and Toddlers   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; CCP 101 minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course focuses on the normal development of infants and toddlers. Emphasis is on the care and education of infants and toddlers in licensed group settings with attention to physical environment, equipment and materials and care giver strategies.

CCP 251   Education of Exceptional Children   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; CCP 101 minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course presents an overview of the major categories of exceptionality. Methods for identifying and working with children in child care, recreational and educational settings are explored. Working with an interdisciplinary team and partnering with parents is a major focus. A working knowledge of resources, a comfort level for working with exceptional children and their families, and exploring the roles of professionals who work with exceptional populations are stressed. This course was previously CCP 100.

Clinical Medical Certification   CMC

CMC 116   Clinical Application Skills   2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 2; Certificate of Completion in a
phlebotomy fundamentals and certification preparation course; may enroll during first semester of program;
Criminal background check
15 lecture, 45 lab, 0 clinical, 0 other, 60 total contact hours

Through class and laboratory experiences, clinical skills are practiced and knowledge applied. OSHA standards, CLIA laws, EKG, medication administration, phlebotomy, and lab specimen collection, microscopy, medical lab testing and assisting in gynecology, obstetrics, urology, pediatrics, respiratory therapy, family practice and use of community resources are emphasized. Students are also introduced to the basic skills and proper techniques of phlebotomy for physicians' offices and outpatient clinics.

CMC 121   Human Disease and Pharmacology   2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 2
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

Introduces students to the human diseases associated with specific body systems and the pharmacology used to treat such diseases. Topics include anatomy and physiology of the integumentary, skeletal, muscular, endocrine (central, peripheral, and autonomic nervous systems), and the special senses, as well as modalities for diagnostic testing and treatment of patients in an ambulatory setting. This course has been designed specifically for students in the Clinical Medical Assistant program.

CMC 230   Bench Test and Laboratory Procedures   2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 2
15 lecture, 45 lab, 0 clinical, 0 other, 60 total contact hours

This course provides students with the knowledge of routine laboratory procedures used in the physician's office, out-patient clinics and HMOs. Topics include urinalysis, hematology, microbiology, blood chemistries and immunology.

CMC 290   Clinical Experience Seminar   1 credit

Level I Prerequisites: Academic Reading and Writing Levels of 6
15 lecture, 0 lab, 0 clinical, 0 other, 15 total contact hours

This seminar provides a final "check-out" for students prior to the clinical experience. In addition, students are given the opportunity to present and share their clinical experience upon return.

CMC 299   Clinical Experience   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 2
0 lecture, 0 lab, 225 clinical, 0 other, 225 total contact hours

This is a 225-hour non-paid externship with a licensed healthcare practitioner, in a medical office, or clinic. This capstone course provides an opportunity for practice of basic medical assistant skills and application of knowledge of administrative, clinical and trans-disciplinary competencies.

Collision Repair Technician   CRT

CRT 200   Refinish Technician I   4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; ABR 111, ABR 112, ABR 123 and ABR 124, minimum grade "B"; ABR 113 or ABR 135, minimum grade "B"
60 lecture, 45 lab, 0 clinical, 0 other, 105 total contact hours

Students will continue their training for possible employment in the collision refinishing industry. Intricate, hard-to-paint automobile parts, such as front bumpers, side mirrors and door handles will be areas of focus. Techniques on proper spray-gun operation and set up, along with specialized polishing procedures, will be covered. Other course topics include the use of job specific tooling that aids in the jigging of small parts and information on the uses and application of various forms of masking materials.

CRT 201   Collision Technician I   **4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; ABR 111, ABR 112, ABR 123 and ABR 124, minimum grade "B"; ABR 113 or ABR 135, minimum grade "B"

60 lecture, 45 lab, 0 clinical, 0 other, 105 total contact hours

Advanced repair techniques such as damage analysis; the use of computerized frame equipment; panel sectioning and non-structural collision repair, will be covered in this course. Lab activities will include proper tool selection and the repair or replacement of collision damaged steering, suspension, and power train components on college-provided vehicles. Additional information relating to set up procedures of full-frame and unitized body vehicles will be presented.

CRT 220   Refinish Technician II   **2 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; Completion of Auto Body Repair certificate with minimum grade "B"

30 lecture, 15 lab, 0 clinical, 0 other, 45 total contact hours

This course provides crucial final detail and inspection information that the modern refinish technician must know in order to effectively release a vehicle back to its owner. Using collision industry standards as a guide, students will learn how and why different shops use various levels of final detailing. Additional topics such as interior and exterior care, buffing, glazing, waxing, overspray removal, leak detection, engine bay reconditioning and preparing vehicles for resale, will be covered.

CRT 221   Collision Technician II   **2 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; Completion of Auto Body Repair certificate with minimum grade "B"

30 lecture, 15 lab, 0 clinical, 0 other, 45 total contact hours

This course will introduce the student to outer panel replacement that may include quarter panels, box sides, door skins, rocker sections, core supports, and various other weld-on panels. Selection and proper application of tools and equipment will be emphasized. Instruction will be provided on various types of collision structural damage, frame rack set-up and measurement including diagnostics and theory of repair.

CRT 240   Refinish Technician III   **4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; Completion of Auto Body Repair certificate with minimum grade "B"

60 lecture, 45 lab, 0 clinical, 0 other, 105 total contact hours

Students will learn problem-solving and time management skills needed to efficiently mask a vehicle for various spray operations. Actual vehicles, used as training aids, will compliment information presented on masking for primer, paint, and spot repairs. Current information concerning color theory and how to effectively tint solid and metallic colors to achieve a blendable color match will also be discussed.

CRT 241   Collision Technician III   **4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; Completion of Auto Body Repair certificate with minimum grade "B"; CRT 201, CRT 221, and WAF 289 minimum grade "B"

60 lecture, 45 lab, 0 clinical, 0 other, 105 total contact hours

Students learn to repair structurally damaged conventional framed and unitized body automobiles and light trucks. Topics such as vehicle set-up procedures and the use of hydraulic frame straightening equipment, along with body and frame construction will be covered. Information concerning air conditioning, heating, suspension and mechanical component replacement as related to the collision repair industry is also presented.

CRT 260   Refinish Technician IV   **4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; Completion of Auto Body Repair certificate with minimum grade "B"; CRT 200, CRT 220, and CRT 240, minimum grade "B"
60 lecture, 45 lab, 0 clinical, 0 other, 105 total contact hours

This course provides advanced collision refinishing training as it is applied in "real world" situations. Students will perform light to medium level refinishing operations on Washtenaw Community College owned vehicles that are to be slated for resale. Solid and metallic base-coat/clear-coat and single stage paint systems will be areas of focus. Panel refinishing, blends, and "cut-ins" will be some of the topics covered.

CRT 261   Collision Technician IV   **4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; Completion of Auto Body Repair certificate with minimum grade "B"; CRT 201, CRT 221, and WAF 289, minimum grade "B"
60 lecture, 45 lab, 0 clinical, 0 other, 105 total contact hours

This capstone course provides students with advanced information concerning structural and non-structural body replacement. Students, working in a "live shop" setting will repair crash damaged vehicles back to pre-accident condition. Subjects covered include current panel bonding materials and procedures, resistance welding, specialty tooling, panel removal/replacement techniques, and the application of corrosion inhibitors such as body sealers and rubberized undercoats.

CRT 280   Refinish Technician V   **4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; Completion of Auto Body Repair certificate with minimum grade "B"; CRT 200, CRT 220, and CRT 240, minimum grade "B"
60 lecture, 45 lab, 0 clinical, 0 other, 105 total contact hours

Through the use of actual vehicles, students will learn advanced refinishing techniques. Repairs will be presented in a "real world" scenario where students, with guidance of instructors and staff, will perform various collision refinishing operations. Information concerning theory of paint blending, planning and set-up of single and multi-stage blend repairs, overall vehicle refinishing, and the techniques used to accomplish these tasks will be presented.

Communication   COM

COM 101   Fundamentals of Speaking   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

Through the use of practical experience, students acquire the essential speaking and listening skills which are the most sought-after skills in the work world. Students work to relieve the stress which the average person encounters in public speaking. Students will learn organizational and delivery skills, as well as gaining a heightened awareness of the relationship between a speaker and an audience.

COM 102   Interpersonal Communication   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This interactive course introduces basic aspects of interpersonal communication that influence the quality of personal and workplace relationships. Aspects of ineffective communication behaviors that create misunderstanding are presented. The impact of effective and ineffective interpersonal communication in various contexts is analyzed, and communication tools designed to evaluate conflicts, reduce misunderstandings and to improve interaction with others are applied.

COM 130   Introduction to Mass Communication   3 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This survey course introduces students to the technological evolution of mass media and its impact on audience attitudes, as well as how it influences our society's economic, social, and political climates. Major emphasis is placed on the history, theory, and criticism of the various mediums, including radio, television, film, and Web-based media. The course attempts to create a more 'critical' consumer of mass media.

COM 142   Oral Interpretation of Literature   3 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This performance-based course provides an introduction to analyzing and vocally/physically communicating thoughts and emotions contained within various literary genres. Emphasis is placed upon the selection and analysis of literature, script preparation, reducing performance anxiety, and developing the vocal and physical delivery skills necessary to achieve the communicative intent of literature in performance.

COM 150   Introduction to Radio Production   3 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This performance-based course introduces students to the world of radio production. Instruction in the basic fundamentals of radio allows students to experience the hands-on processes involved, including equipment operation and editing software, mixing and editing techniques and the production process. With this knowledge, students create a variety of live and edited projects including promos and a weekly show on WCC's own radio station, Orchard Radio. A brief overview of the history of radio and an understanding of the terminology complete this course.

COM 155   Scriptwriting for Broadcast Arts   3 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

Scriptwriting for Broadcast Arts is designed to give students practical experience in writing styles for the various media of the broadcast industry. Through hands-on exercises and projects, students will become familiar with various writing techniques, develop broadcast writing skills and apply those skills to the creation of news stories, interviews, narration, pitches, feature writing, public service announcements and commercials. Students will also be exposed to current trends in the industry and given the opportunity to critique those trends and theorize about upcoming styles.

COM 160   Voice and Articulation   3 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this performance-based course, students are introduced to the verbal and non-verbal elements that are utilized in broadcast announcing. Focus is placed on the verbal basics such as breathing, pitch control and articulation, along with the non-verbal fundamentals of paralanguage and body language. These rudiments are paired together with copy analysis and script marking to give students a full understanding of the process of announcing in the many different fields of broadcasting. Practice in script reads, vocal exercises and self-evaluations give the student ample opportunities to understand and showcase these new techniques.

COM 170   Advanced Radio Production   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; COM 150 minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course is designed to give students a working knowledge of all aspects of a radio station, including Federal Communication Commission rules, licensing regulations, station genres, networks, and programming. Students will also be acquainted with the day-to-day workings of a station, as well as producing a variety of programs for various situations. Students will build upon the basic production skills gained in COM 150, as well as gain experience in various radio production rules.

COM 183   Persuasion   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

Students will examine and analyze the persuasive techniques used within the different mediums of the mass media. Emphasis will be placed on radio and television and the various segments within those mediums including news, advertising and commercial product placement. This course will expose students to various theories and allow them to identify those theories which are prevalent throughout the mass media and the persuasive effects those theories have on the various audiences.

COM 200   Family Communication   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

Family issues are at the forefront of national concerns, particularly in governmental, educational, and religious arenas. In this course, students learn the foundations of family communication through definitions and theories on how families work. Students will learn how families identify themselves through the creation of and practice of personal narrative and the genogram. This course also examines the ways in which family members interact in healthy and unhealthy ways to meet life's challenges and the ways media, government, and religion influence the family.

COM 210   Nonverbal Communication   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students will explore and examine various functions and categories of nonverbal communication including, but not limited to, gestures, movement, facial expressions, vocal behavior and appearance. Through interactive exercises, students will learn how to enhance their own nonverbal communication behavior and better interpret others' behavior to become more successful in their personal and professional lives.

COM 225   Intercultural Communication   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course allows students to explore communication between members of different cultures. During the course, students will become familiar with the ways that nonverbal and verbal communication influence intercultural relationships. Students will share cultural similarities and differences and will discuss ethical ways to use communication in order to construct a bridge between cultures.

COM 235   Broadcast Arts Practicum   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; COM 155, COM 160, and COM 170 minimum grade "C"

0 lecture, 0 lab, 0 clinical, 45 other, 45 total contact hours

This course requires students to spend scheduled producing time in the areas of broadcast production, specifically in writing, editing and announcing, to gain experience in the day-to-day duties of radio production professionals. Students will complete an electronic portfolio (demo reel) of their best work as part of an audition package to submit to potential employers and/or internships. The title of this course was previously Practicum: Orchard Radio.

COM 240   Broadcast Arts Internship   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to Broadcast Arts program; consent required
15 lecture, 0 lab, 0 clinical, 150 other, 165 total contact hours

Broadcast Art students will work in conjunction with a local broadcasting station to gain experience in the broadcasting industry. Students will be exposed to and work in many areas within a station including, but not limited to, marketing and promotions, production/programming, sales and engineering. Students will acquire working knowledge of the day-to-day operations within the broadcasting station, as well as of industry terminology and practices.

Computer Information Systems   CIS

CIS 099   Computer Skills for Beginners   1 credit

Level I Prerequisites: Academic Reading Level 3; Academic Writing Level 2
15 lecture, 15 lab, 0 clinical, 0 other, 30 total contact hours

This class teaches the minimum Computer Literacy skills needed to succeed at WCC. Competencies covered include using Microsoft Windows, basic word processing, Internet skills, file management and email. Students will also be exposed to Blackboard and MyWCC basics. This title of this course was previously Computer Literacy.

CIS 100   Introduction to Computer Productivity Apps   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 1
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This class covers the fundamentals of using productivity applications, including word processing, spreadsheet, presentation in both the traditional desktop and in cloud environments. Other topics encompass Web concepts and searching and evaluation of web sites. Students enrolling in this course are expected to be familiar with using a web browser, sending email, and basic file management skills. Students with no prior experience with computers are advised to take CIS 099. The title of this course was previously Introduction to Computers and Software Applications.

CIS 110   Introduction to Computer Information Systems   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
Level II Prerequisites: A working knowledge of spreadsheet and database software or CIS 100.
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

The course covers the principles of information systems for business majors. It provides an overview of information systems including a review of computer concepts, how technology is used in business, the information systems discipline, and the systems development life cycle. Students need a working knowledge of applications software and keyboarding to be successful in the course.

CIS 117   Windows Operating System   2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

This course covers the use of an operating system with a graphical user interface to maintain, troubleshoot, repair, and customize a microcomputer system. Respect for the rights of others and proper security measures are also discussed. Windows XP is currently used in the course. The course contains material previously taught in CIS 116 and CIS 117.

CIS 121   Linux/UNIX I: Fundamentals   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
Level II Prerequisites: Completion of a CIS (above CIS 100), CPS, or CSS course
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course introduces UNIX and Linux tools to the experienced computer user and to those with only a basic knowledge of computers. The course covers the UNIX/Linux file system, communication with other users, editors, file manipulation and processing, basics of pipes and redirection, simple shell programming, introduction to the X Windows system, and a basic introduction to Linux.

CIS 161   Introduction to PowerShell   4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 4; CNT 211 minimum grade "C"
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This course introduces students to Windows PowerShell. Students develop basic scripts and learn commands for managing the Windows environment.

CIS 174   CIS Co-op Education I   1-3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Two courses in CIS discipline, minimum grade "C"; consent required
0 lecture, 0 lab, 0 clinical, 120 other, 120 total contact hours

This course recognizes the value of learning which takes place on the job by offering college credit for development and achievement of learning objectives which are accomplished through current work experiences. Students also participate in monthly work related activities, such as meetings or seminars.

CIS 206   Linux/UNIX II: Basic System Administration, Networking, and Security   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
Level II Prerequisites: CIS 121
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This is the second of four courses on the Linux operating system. Linux System administration tasks are discussed and practiced. This course is designed to help prepare students for Linux Certification Exams. Students should be familiar with common Linux distributions and should be comfortable with basic installation and configuration to succeed in this course.

CIS 208   Linux/UNIX III: Intermediate System Administration, Networking, and Security   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
Level II Prerequisites: CIS 206 minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This is the third of four courses on the Linux operating system. Linux networking theory is discussed and practical application of the theory is shown through lab exercises. Students should be familiar with common Linux distributions and comfortable with system administration activities to succeed in this course. This course is designed to prepare students for Linux Certification Exams.

CIS 221   Linux/UNIX Programming and Scripting I   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
Level II Prerequisites: CIS 121 minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

Students learn to use UNIX more efficiently with advanced forms of the commands and utilities building on the fundamentals of Linux/UNIX, as well as new commands and constructs. Advanced forms of topics include sed, grep, awk, perl, and how to effectively use regular expressions, as well as constructs and special commands used in writing shell scripts. New topics covered include functions, traps, arithmetic on variables and input/output techniques.

CIS 222   Linux/UNIX Programming and Scripting II   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
Level II Prerequisites: CIS 221
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course covers advanced shell programming topics as well as an introduction to awk, perl, and php.

CIS 274   CIS Co-op Education II   **1-3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; CIS 174 minimum grade "C"; consent required
0 lecture, 0 lab, 0 clinical, 120 other, 120 total contact hours

In this course, students gain skills from a new experience in an approved, compensated, computer-related position. Together with the instructor and employer, students set up work assignments and learning objectives to connect classroom learning with career-related work experience. This is the second of two co-op courses.

CIS 282   Relational Database Concepts and Application   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
Level II Prerequisites: CPS 120, CPS 171, or CIS 265, minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This is an introduction to relational database theory and practice. Topics covered include terminology, normal forms, design of database tables, SQL (structured query language), and application generation. The student will incorporate SQL in procedural files to program applications. This course is intended for anyone possessing a basic knowledge of programming who is interested in database theory and practice. Prerequisites will be checked on the first day of class. The title of this course was previously Small Systems Database.

CIS 288   Systems Analysis and Design   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; CPS 161 or CPS 171, minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course surveys computer applications and techniques in major areas of business, business structure, analytical communication with system users, principles of package software evaluation and acquisition, planning schedules and resource requirements for software development, and producing software development specifications. Software for data and process modeling will be introduced and used. Several approaches to system planning and development will be examined. Prerequisites will be checked on the first day of class.

Computer Networking Technology   CNT

CNT 201   Administering Microsoft Windows Client Operating Systems   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
Level II Prerequisites: CST 225, CNT 206 or CIS 117, minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course is designed to give students a strong foundation in installing, configuring and administering Windows client operating systems. Topics covered include configuring file systems, security, networking protocols and network printing. Performance tuning and troubleshooting will be taught, with an emphasis on the boot process and application support. A basic understanding of Windows operating systems and networking principles is required. The title of this course was previously Administering Microsoft Windows XP Professional.

CNT 206   Internetworking I - Fundamentals   4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
Level II Prerequisites: CST 118, CST 150, and CST 225, minimum grade "C", equivalent experience, or minimum score 80% on departmental exam
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This course is part of the CISCO networking curriculum at WCC. It prepares students for a portion of the CISCO Certified Network Associate (CCNA) certification examination. Students learn the fundamentals of the Open Systems Interconnect (OSI) model and the basics of computer networking including contemporary network services, transmission media, and protocols. The most common implementations in today's Local Area Networks (LANs) and Wide Area Networks (WANs) are used. This course was previously CNT 200.

CNT 211   Installing and Configuring Windows Server 2012   4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 1; CNT 201 or CSS 180 or CST 225, minimum grade "C"; may enroll concurrently in CNT 201
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This course is part of a series of courses that provides skills and knowledge necessary to implement the core infrastructure services in a Windows Server 2012 environment and to lay a foundation in the preparation for the Windows Server 2012 MCSA certification. This course covers the installation and initial configuration of Windows Server 2012 including server virtualization, an introduction to various server roles, including active directory services with group policies, the DNS and DHCP roles, storage services such as RAID and Storage Spaces, the file and print services role, and thorough coverage of IPv4 and IPv6 addressing. The title of this course was previously Administering and Managing Microsoft Windows Server Active Directory.

CNT 216   Internetworking II - Routers   4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; CNT 206 minimum grade "C-"
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This course is part of the CISCO networking curriculum at WCC. It prepares students for a portion of the CISCO Certified Network Associate (CCNA) examination. Students gain the knowledge and skills to install, configure, update and troubleshoot network routers. This course was previously CNT 225.

CNT 217   CCNA Security Certification   4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; CNT 236 minimum grade "C", may enroll concurrently or equivalent industry experience
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This course prepares students for the Cisco Certified Network Associate (CCNA) Security certification examination. The course provides students with the knowledge and hands-on skills necessary to install, configure and monitor Cisco security devices.

CNT 223   Administering Windows Server 2012   4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 1; CNT 211 minimum grade "C"
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This course is part of a series of courses that provides skills and knowledge necessary to manage and maintain the core infrastructure required for a Windows Server 2012 environment and to lay a foundation in the preparation for the Windows Server 2012 MCSA certification. This course covers advanced active directory group policy concepts, user and computer administration, A.D. database snapshots and recycle bin. Advanced DNS concepts are also covered as well as remote access VPN's, direct access, and NPS (Radius) servers. Advanced file system concepts such as FSRM file screens, access enumeration, DFS, disk quotas, encryption and object auditing as well as deploying/maintaining server images, WSUS updates, and server monitoring complete the course. The title of this course was previously Windows Server Networking Infrastructure Configuration.

CNT 224   Configuring Advanced Windows Server 2012 Services   4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; CNT 223 minimum grade "C", may enroll concurrently
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This course is part of a series of courses that provides skills and knowledge necessary to manage and maintain the core infrastructure required for a Windows Server 2012 environment and to lay a foundation in the preparation for the Windows Server 2012 MCSA certification. This course covers advanced DHCP and DNS service settings, advanced files services - BranchCache, Dynamic Access Control, Network Load Balancing, and Failover Clustering. Also covered is disaster recovery implementation using the server backup tool for file backup as well as complete OS restoration. Advanced active directory concepts including DS Replication with child domains, sites, and forest trusts will also be covered. Certificate servers will also be implemented as well as covering rights management and federation services. Terminal services and web service will complete the course. The title of this course was previously Microsoft Server Administrator.

CNT 226   Internetworking III - Switches   4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; CNT 216 minimum grade "C-" or equivalent
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This course is part of the CISCO networking curriculum at WCC. It prepares students for a portion of the CISCO Certified Network Associate (CCNA) certification examination. It provides students with the knowledge and skills necessary to install, configure, update, and troubleshoot switched LANs and VLANs. Students learn additional skills including classless IP addressing, configuring single area OSPF and EIGRP, switching concepts, configuring CISCO switches, configuration of VLANs, concepts and configuration of VTP, Access Control Lists, and an introduction to wireless LANs. Students must complete CNT 216 or have instructor approval to register for this course. This course was previously CNT 235.

CNT 236   Internetworking IV - WANs   4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; CNT 226 minimum grade "C-"
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This course is part of the CISCO networking curriculum at the College. It prepares students for a portion of the CISCO Certified Network Associate (CCNA) Certification Examination. The course focuses on advanced IP addressing techniques such as Network Address Translation (NAT), Port Address Translation (PAT), DHCP, and WAN technology and terminology, including PPP, ISDN, DDR, Frame Relay, network management, and introduction to optical networking. In addition, the student will prepare for taking the CCNA Exam. This course was previously CNT 245.

CNT 237   Health Information Networking   **4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; CNT 236 minimum grade "C"

60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

The Cisco Health Information Networking course is a technology-focused curriculum primarily designed for Cisco Networking Academy students. Students will be introduced to Electronic Health Care Records regulations and terminology. Students will be expected to use their Cisco CCNA training to design and implement networks in health care settings. Students with industry experience using Cisco technologies may contact the instructor for permission to waive the prerequisite.

CNT 241   Microsoft Exchange Server Administration   **4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
Level II Prerequisites: CNT 211 or equivalent
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This course gives students the knowledge and practice necessary to establish an exchange server environment, ranging from one-server organizations to large enterprises with multiple exchange servers. Student proficiency in the planning, installation, configuration, monitoring, backup and troubleshooting of exchange servers is the primary goal. The course also provides initial preparation towards the Microsoft MCSA/MCSE Elective Exam.

CNT 251   Designing Windows Server Security   **4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; CNT 211, CNT 223 or CNT 224, minimum grade "C"
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

In this course students will learn and use the various tools and features provided by Windows Server necessary to secure Windows Server Local and Network resources. Emphasis is placed on security features and components not covered in the other Windows Server classes such as Bitlocker, IPSec, Security Templates, WSUS, SMTP and POP3 security, Certificate Server, Kerberos and NTLM Authentication, and covers in detail, most features of Forefront Threat Gateway Server, Microsoft's Software Firewall. Students with equivalent experience may contact the instructor for permission to waive the prerequisite.

CNT 290   Network Troubleshooting and Forensics   **4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; CIS 121, CNT 224 and CNT 236, minimum grade "C"
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students will be introduced to network troubleshooting and network forensics such as enterprise, remote access, LAN, WAN, voice over IP and wireless configurations. This course includes monitoring and troubleshooting of various network services, and after-event analysis of network intrusions.

Computer Science   CPS

CPS 112   Game Development for Beginners   **4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This course introduces the basics of 2D game design and development. Students will identify game resource requirements and then use supplied game resources to make a complete 2D game. Students will develop game algorithms using object instances, sprites, events, action blocks, library functions, levels, sound effects, music, rooms and scores. Students will develop games without using programming language, but they are expected to have experience with computer application software.

CPS 120   Introduction to Computer Science   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; CIS 100 or CIS 110
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course is an introduction to computer science for those planning to take advanced courses in the computer programming field or for those who do not want to take programming courses but a computer course is required. Students learn to write, enter, compile and execute simple computer programs. This course is intended to bridge the gap between a basic computer literacy and advanced courses. Topics include numbering systems, operating systems, database, programming, networking, Internet and algorithms. Students must have basic computer literacy in order to be successful in this course. Students with computer experience equivalent to CIS 100 or CIS 110 may contact the instructor for permission to waive the prerequisite.

CPS 161   An Introduction to Programming with Java   **4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 4
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This course is an introduction to the Java programming language. Looping, conditional logic and string manipulation are some of the basic programming concepts covered. Object-oriented concepts are covered such as constructors, polymorphism, abstract classes, interfaces and exceptions. Input/output (I/O) and graphical user interface (GUI) topics are minimally covered. CPS 261 will cover these topics in depth. Prior programing experience is recommended. Students who have no programming experience should consider taking CPS 120. This course was previously CIS 175.

CPS 171   Introduction to Programming with C++   **4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 4
Level II Prerequisites: CIS 100, CIS 110, or CPS 120, minimum grade "C"
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This is an introduction to programming using the C++ language. Students should have basic experience using a computer but no prior programming is required. Students learn about problem solving strategies, top-down program development and programming style. Topics include sequential, decision and iterative control structures, functions, basic data structures and an introduction to classes. Students write and execute approximately eight C++ programs. Students with computer experience equivalent to CIS 100 or CIS 110 may contact the instructor for permission to waive the CIS prerequisite.

CPS 251   Android Programming Using Java   **4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; CPS 161 minimum grade "C"
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students create programs written in Java to run on the Android smart phone operating system. Google APIs for telephony, GPS and "Google maps" will be explored. Students taking this class should have a good knowledge of Java.

CPS 255   IOS/Objective C - Apple Ipad/Iphone   **4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 4; CPS 161 or CPS 171, minimum grade
                             "B" or equivalent programming experience
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This course covers programming in "Objective-C" on the IOS platform. Programs will be developed that run on Apple Ipad and/or Apple Iphone.

CPS 261   Advanced Java Concepts   4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; CPS 161 minimum grade "C"
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This course is a continuation of the Java concepts covered in CPS 161. Topics covered include input/output, graphical user interfaces associated with AWT/Swing, data structures, networking, and multitasking (Threads). Students entering this class should have a good understanding of object-oriented programming concepts such as inheritance and polymorphism. The title of this course was previously Programming in Data Structures in Java.

CPS 271   Object Features of C++   4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; CPS 171 minimum grade "C+"
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This course continues the study of C++ begun in the prerequisite course. Students learn the object-oriented features of the language. Topics include classes, constructors and destructors, operator overloading, pointers, dynamic allocation of memory, inheritance, polymorphism, file manipulation, templates, and exceptions. Prerequisites will be checked on the first day of class.

CPS 272   Data Structures with C++   4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; CPS 271 minimum grade "C"
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This course continues the C++ sequence. It covers more advanced computer science features as implemented in C++. Topics include advanced data structures, complexity/efficiency of algorithms, recursion and problem-solving.

CPS 276   Web Programming Using Apache, MySQL, and PHP   4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; CPS 161 or CPS 171, minimum grade "C"
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

Students will build dynamic database-driven Web applications using PHP and MySQL. Students who have not taken CPS 161 or CPS 171, but have equivalent programming experience in any language, should request an override from the instructor or department chair. HTML knowledge is helpful.

CPS 278   Java Server Programming   4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; CPS 161 minimum grade "C"

60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This course covers Java Servlets, Java Server Pages (JSP), Java Bean fundamentals and Java Database Connectivity (JDBC). Students taking this class should have a good knowledge of Java fundamentals. Some knowledge of simple HTML and SQL is helpful but not mandatory. This course was previously CIS 278.

CPS 293   C# .NET   **4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; CPS 161 or CPS 171, minimum grade "C+"
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This course assumes some programming experience and will cover the fundamentals of the C# language and the Microsoft .NET architecture. Language fundamentals will include C# basics and object-oriented programming techniques, such as data abstraction, encapsulation, polymorphism and inheritance. This course will cover Graphical User Interfaces (GUI) using console application, Window Forms (WinForms) as well as Active Server Pages (ASPX) Web pages. Other topics include: properties, exceptions, events, collections, graphics data interface (GDI+). Data access techniques will be covered including input/output (I/O) classes, database active-X data objects (ADO.Net).

CPS 295   Advanced C#.Net and ASP.Net   **4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
Level II Prerequisites: CPS 293 minimum grade "C"
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This course is a continuation of CPS 293 and is intended for students to learn more advanced skills in C#. Class projects will include many advanced features of Microsoft Visual Studio 2005. There will be a special focus on making full use of the C# language using XML, database, Web services and other technologies. Additional focus will be on creating reusable code, using object-oriented techniques such as encapsulation, inheritance, interfaces, delegates and polymorphism.

Computer Systems Security   CSS

CSS 180   Computer Security I   **4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; CIS 100 or CIS 117, minimum grade "C" or industry experience
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

Computer Security I is the introductory course in a series of courses dedicated to computer security. It provides an overview of computer systems with an emphasis on security. Topics include basic architecture of computers and operating systems, command line interface, networking concepts and security fundamentals. This course assumes an intermediate level of computer knowledge and experience. The title of this course was previously Computer Security for PC's.

CSS 200   Computer Security II   **4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; CIS 121, CNT 201 and CSS 180, minimum grade "C"
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This course provides a solid grounding in Information Assurance. Topics to be covered include understanding security measures, techniques for securing systems, legal issues, basic intrusion detection and recovery methods. The title of this course was previously Information Assurance I.

CSS 205   Computer Security III   **4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; CNT 206, CNT 216 and CSS 200, minimum grade "C"
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This course is dedicated to the techniques of network penetration testing. Through various hand-out exercises, the student will be introduced to the concepts, techniques, tools, and methodologies for evaluating and auditing network vulnerabilities and properly securing networks from attack. The title of this course was previously Information Assurance II.

CSS 210　Computer Security IV　　　　　　　　　　　　　　**4 credits**

Level I Prerequisites:　Academic Reading and Writing Levels of 6; CNT 211 and CNT 216, minimum grade "C"
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This course is dedicated to the implementation of network security. Students will learn how to design and implement security solutions that reduce the vulnerability of computer networks. The student is introduced to the various methods for defending a network. Topics include concepts and principles of network security, packet filtering with ACLs, network address translation (NAT), configuring and deploying multiple firewall topologies, implementing virtual private networks (VPNs), user authentication and intrusion detection. The title of this course was previously Managing Network Security I.

CSS 212　Computer Security V　　　　　　　　　　　　　　**4 credits**

Level I Prerequisites:　Academic Reading and Writing Levels of 6; CNT 211 and CSS 205, minimum grade "C"
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This course teaches students to design and implement secure solutions for wireless networks. The student is first introduced to the fundamentals of wireless technology, including principles of radio transmission. Other topics encompass IEEE standards, implementing wireless topologies, wired equivalent privacy (WEP) and the extensible authentication protocol (EAP) framework. The title of this course was previously Fundamentals of Secure Wireless Local Area Networks.

CSS 215　Managing Network Security II　　　　　　　　　　　**4 credits**

Level I Prerequisites:　Academic Reading and Writing Levels of 6
Level II Prerequisites:　CSS 210 minimum grade "C"
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This course will expose the student to various defense methodologies associated with Virtual Private Networks (VPN), Host Intrusion Detection Systems, and Network Intrusion Detection Systems (NIDS). Students will also be introduced to the best practices associated with properly securing critical business network systems using VPNs.

CSS 220　Computer Security VI　　　　　　　　　　　　　　**4 credits**

Level I Prerequisites:　Academic Reading and Writing Levels of 6; CSS 210 and CSS 212, minimum grade "C"
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This course prepares the student for the Certified Information Systems Security Professional (CISSP) Certification examination. Topics encompass the ten CISSP domains: Access Control, Application Security, Business Continuity and Disaster Recovery Planning, Cryptography, Information Security and Risk Management, Legal, Regulations, Compliance and Investigations, Operations Security, Physical Security, Security Architecture and Design and Telecommunications and Network Security. The title of this course was previously Network Security Design.

CSS 270　Computer Security VII　　　　　　　　　　　　　　**4 credits**

Level I Prerequisites:　Academic Reading and Writing Levels of 6; CIS 121, CNT 201, CNT 211, CSS 200 and CST 155, minimum grade "C"
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This introductory data recovery and analysis course is the first of two courses dedicated to training individuals to conduct corporate computer incident examinations. Students will be introduced to proper procedures for the preservation, identification, extraction, documentation, reporting, acquisition, analysis and interpretation of computer data. Topics covered include evidence handling, chain of custody, collection, preservation, identification and recovery of computer data. Important Note: Students should be able to pass a criminal background check before taking this course. In order to practice Computer Forensics in the State of Michigan, individuals must be licensed as private investigators or qualify for an exemption under statutes pertaining to the licensure of private investigators. The title of this course was previously Computer Forensics I.

CSS 272   Computer Security VIII   2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; CJT 208, CSS 200, CSS 270 and CST 155, minimum grade "C"
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

Designed for those seeking advancement in the computer security profession, this course surveys legal issues that impact Information Technology professionals, IT Security practitioners and data recovery experts. Substantive and procedural law regarding the right to privacy, the duty to preserve evidence, searches and seizures of electronic evidence, the admissibility of electronic evidence in court, and the prosecution of criminal and civil claims will be covered. This course contains materials previously taught in CSS 240, High-Technology Crime.

CSS 275   Computer Security IX   4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; CSS 270 minimum grade "C"
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This course continues the theory and skills of advanced data recovery and analysis. It introduces additional software used to perform forensic analysis of file systems such as Linux, FAT 16, FAT 32 and NTFS. Important Note: Students should be able to pass a criminal background check before taking this course. In order to practice Computer Forensics in the State of Michigan, individuals must be licensed as private investigators or qualify for an exemption under statutes pertaining to the licensure of private investigators. This title of this course was previously Computer Forensics II.

Computer Systems Technology   CST

CST 118   Microsoft Command Line Fundamentals   2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
Level II Prerequisites: CIS 100 minimum grade "C" or equivalent
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

In this course students use command line, utilizing the MS-DOS operating system as the instructional tool. Emphasis is placed on the use of the relevant commands used regularly by network administrators/technicians. Activities include learning commands, syntax, parameters, redirection, error messages, and file/directory structures. Networking activities include mapping drives, capturing printers and network backups. Preparation of removable boot devices and creation/implementation of batch files are included. This course was previously ELE 118.

CST 160   Computer Technology I   4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 2; CIS 100 minimum grade "C"
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

Through hands-on experiences, this course prepares students to install, configure, upgrade, and troubleshoot personal computers. Students learn the fundamentals of PC hardware including the motherboard, power supply, CPU, memory, storage devices, add-on cards, BIOS/UEFI, and CMOS. In addition, students learn the fundamentals of the Windows operating system including operating system functions, structure, major system files, and the basic boot sequence. This course contains content previously taught in CST 150.

CST 165   Computer Technology II   4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; CST 160 minimum grade "C", may enroll concurrently
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

Through hands-on experiences, this course builds on the student's knowledge of personal computer installation, configuration, upgrading, and troubleshooting, with an emphasis on servers in the data center. Students learn both fundamental and advanced techniques in working with the Windows operating system. Students apply their understanding of the operating system's functions and structure, and employ common diagnostic utilities and tools, to identify steps to correct system problems. This course contains content previously taught in CST 155.

CST 174　CST Co-op I　　　　　　　　　　　　　　**1-3 credits**

Level I Prerequisites:　Academic Reading and Writing Levels of 6; consent required
0 lecture, 0 lab, 0 clinical, 120 other, 120 total contact hours

In this course, students gain skills from a new experience in an approved, compensated, industry-related position. Together with the instructor and employer, students set up work assignments and learning objectives to connect classroom learning with career-related work experience.

CST 225　PC Networking　　　　　　　　　　　　　　**3 credits**

Level I Prerequisites:　Academic Reading and Writing Levels of 6
Level II Prerequisites:　CIS 100 minimum grade "C"
30 lecture, 30 lab, 0 clinical, 0 other, 60 total contact hours

Students learn basic concepts associated with using PC's in a networked environment, including connecting to a network and connecting networks together. Included are peer-to-peer and client/server networks, network topologies and architectures, the OSI model, Ethernet and TCP/IP protocols, IPv4/IPv6 and MAC addressing, routers and routing, network printing, NAT and VPN's, plus wireless networking. The course also provides a strong foundation in preparation for the CompTIA Network+ Exam. This course contains material previously taught in ELE 216A and ELE 225A.

CST 270　Data Recovery and Analysis　　　　　　　　**4 credits**

Level I Prerequisites:　Academic Reading and Writing Levels of 6; CST 118 and CST 155, minimum grade "C"

60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

In this course, identification, recovery and analysis of data on storage media are covered. Students will be introduced to the tools, techniques and methods of identifying, recovery, analysis, and reconstruction of lost data on a storage media device. The proper procedures for the preservation, handling, recovery and reporting of computer data will be presented.

CST 275　Data Recovery and Forensics　　　　　　　**4 credits**

Level I Prerequisites:　Academic Reading and Writing Levels of 6; CST 270 and CNT 201, minimum grade "C"
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This course continues to build knowledge and experience of data recovery and forensics. Topics in this course include DNA recovery of a file, corporate application notes for forensic examiners, metadata discovery tools, steganography discovery and recovery tools and techniques, use of KFF known file filters, introduction to recovery of cell phone and mobile devices, printer banding, picture GPS analysis and various criminal and corporate case image file analysis and reporting.

Construction Management　　　　　　　　　　　　　　CMG

CMG 130　Construction Site Safety and OSHA Regulations　　　**3 credits**
Level I Prerequisites:　Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course covers the application of safe work practices required by Michigan Occupational Safety and Health Act (MIOSHA) and the Federal Occupational Safety and Health Administration (OSHA) as they apply to construction site safety. Topics include: personal protective equipment; hand, portable and stationary power tools and equipment; construction site safety; MIOSHA and OSHA standards; HAZMAT; and an investigation into the philosophical, social, economic, and technological basis for safety. Students that complete the course can receive an OSHA-30 Hour card. This course is part of the 60 contact hours required for the State of Michigan Builders license. The title of this course was previously Construction Site Safety and MIOSHA Regulations.

CMG 150   Introduction to Construction Management   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 4
30 lecture, 15 lab, 0 clinical, 0 other, 45 total contact hours

This course covers an introduction to developing, planning, and scheduling construction projects. Additional topics include: site development, material usage, specifications, estimating and managing cost control.

CMG 170   Construction Graphics   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; CMG 150 minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course covers basic print reading skills for residential and light commercial/industrial projects. It includes symbols and conventions, terminology, print organization, and basic material take-off techniques. It will include refinement of basic sketching and drawing skills.

CMG 180   Application of Construction Materials   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; CMG 150 minimum grade "C"
30 lecture, 15 lab, 0 clinical, 0 other, 45 total contact hours

The purpose of this course is to give students an overview of the basic properties and use of construction materials. Students will be required to attend lecture and lab to analyze basic materials that include: soils, concrete, masonry, steel, wood, plastic, finishes, and thermal.

CMG 200   Construction Systems   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; CMG 170 minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course covers structural systems, associated non-structural components, and consideration appropriate to mechanical, electrical, plumbing, and support equipment.

Construction Technology   CON

CON 104   Construction Framing I   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 3; CON 108 minimum grade "C"
15 lecture, 60 lab, 0 clinical, 0 other, 75 total contact hours

This course covers light frame construction for homes and light industrial buildings. Construction theory in class is included to support lab activities on and offsite. Students will discuss layout techniques, materials required, and proper safety for deck and platform structures, demolition of existing systems, foundation systems and rough stair systems. The title of this course was previously Residential Construction I.

CON 105   Construction Framing II   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 3; CON 104 and CON 108, minimum grade "C"; CON 104 may enroll concurrently
15 lecture, 60 lab, 0 clinical, 0 other, 75 total contact hours

This course covers light frame construction for homes and light industrial buildings to include wall framing, roof framing, and installation of doors and windows. Construction theory in class is included to support lab activities on and offsite. Students will discuss layout techniques, materials required and proper safety regulations for building these structural systems. The title of this course was previously Residential Construction II.

CON 106   Math, Measurement, and Graphics   3 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

Students learn construction math formulas, review basic fraction problem solving for construction, basic construction measurement, and graphic communication used in construction.

CON 108   Introduction to Construction Technology   2 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 2
15 lecture, 30 lab, 0 clinical, 0 other, 45 total contact hours

This is an introductory course for those students that have little or no prior construction training. Students will be introduced to construction terminology, materials, tool usage and methods of measurement. Students will become familiar with construction safety requirements and proper handling of materials, tools and equipment used at all levels of construction projects. Students with acceptable experience or training should contact instructor for override into next course in sequence.

CON 130   Commercial Property Maintenance I   3 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

Students will be introduced to safety, sexual harassment and fair housing regulations set forth by the state and federal government. Students will learn customer service and time management as they relate to employment in the repair and maintenance of commercial properties (including: hospitals, hotels, malls, residential rental property, both single and multifamily, resorts, and office buildings). Students will understand the basic components of plumbing in a commercial property and apply proper techniques to correcting malfunctions and/or installation of new products. Students will learn the basic components of doors, locks and closers and apply proper techniques to correcting malfunctions and/or installation of new products. This course was previously TRI 131.

CON 133   Commercial Property Maintenance II   3 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6; CON 130 minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

Students will be introduced to basic electricity. Students must comprehend and apply proper safety guidelines for the fundamentals of electricity and how those apply to series circuits, parallel circuits and electrical devices. Comprehension and application of advanced plumbing techniques will be addressed including sinks, faucets, drains, water heaters and boilers. Students will understand flooring at each level including, sub-flooring and floor covering. This course was previously TRI 133.

CON 135   Commercial Property Maintenance III   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; CON 133 minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

Students will be introduced to HVAC terminology. Students will recognize heating and refrigeration systems and components. Comprehension of major appliance components and installation processes applying proper industry standards. Students will also understand wall covering by applying proper industry, safety and ventilation standards. This course was previously TRI 135.

CON 137   Commercial Property Maintenance IV   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; CON 135 minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

Students will comprehend advanced HVAC terminology for troubleshooting system and electrical issues. Students will recognize the different types of exterior finishes and understand repairs of those finishes following proper industry and safety standards. Students will examine chemical and cleaning systems for pools. Students will identify pool maintenance issues and understand how to repair said issues. This course was previously TRI 137.

CON 170   Cabinetry and Millwork I   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; CON 108 minimum grade "C", may enroll concurrently
30 lecture, 30 lab, 0 clinical, 0 other, 60 total contact hours

Students will apply basic tool set up and operation for all hand and stationary tools necessary to complete fabrication and veneer application. There will be a focus on proper use and assembly of the materials. These techniques will be used for identifying and preparing rough and manufactured lumber for further working into panels, lathe and molding blanks, doors, drawers and miscellaneous components. Each student will build a cabinet from rough lumber, incorporating a fitted drawer and a frame and panel door using a raised panel, hung on mortised butt hinges. The title of this course was previously Introduction to Cabinetry and Millwork.

CON 173   Cabinetry and Millwork II   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; CON 170 minimum grade "C"
15 lecture, 45 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students will apply tool set up and operation for advanced hand and stationary tools. These techniques will be used for identifying and preparing rough lumber, manufactured lumber, and plastics for working into complex assemblies. There will be a focus on using the vacuum press and other techniques to fabricate curved and freeform components. Each student will produce at least one piece of furniture or millwork of appropriate complexity; this project is chosen by the student consultation with the instructor. This course was previously TRI 171. The title of this course was previously Cabinet Making Principles and Concepts.

CON 174   CON Co-op Education I   1-3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; consent required
0 lecture, 0 lab, 0 clinical, 120 other, 120 total contact hours

In this course, students gain skills from a new experience in an approved, compensated position in the field of construction. Together with the instructor and employer, students set up work assignments and learning objectives to connect classroom learning with career-related work experience.

CON 175   Cabinetry and Millwork III   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; CON 173 minimum grade "C"
15 lecture, 45 lab, 0 clinical, 0 other, 60 total contact hours

The students will build upon the skills learned in prerequisite courses with a goal of creating and manufacturing an entire piece of furniture from rough lumber, manufactured lumber, and plastic. The focus will be to complete the construction of a piece of furniture of appropriate complexity. Students will further their mastery of hand and machine tool maintenance. This course was previously TRI 271. The title of this course was previously Cabinet Making Fabrication.

CON 180   Introduction to Green Building   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 3
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students will be introduced to aspects of green and sustainable building practices. Beginning with an overview of the environment and the history of the green construction movement, students will learn sustainable construction theories and how they differ from standard construction practices. Topics include LEED certification, building systems, materials, site selection, air quality and remodeling.

CON 204   Construction Finishes - Interior   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 3; CON 105 minimum grade "C", may enroll
concurrently
15 lecture, 60 lab, 0 clinical, 0 other, 75 total contact hours

This course covers the installation of interior finishes for homes and light industrial buildings to include insulation, drywall applications, flooring, and interior trim. Construction theory in class is included to support lab activities on and offsite. Students will discuss layout techniques, materials required and proper safety regulations for finishing interiors per industry standards. This course was previously Residential Construction III.

CON 205   Construction Finishes - Exterior   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 3; CON 105 minimum grade "C", may enroll
concurrently
15 lecture, 60 lab, 0 clinical, 0 other, 75 total contact hours

This course covers exterior finishes for homes and light industrial buildings to include siding, roofing, and waterproofing systems. Construction theory in class is included to support lab activities on and offsite. Students will discuss layout techniques, materials required, and proper safety regulations for finishing exteriors per industry standards. This course was previously Residential Construction IV.

CON 220   Construction Licensing, Contracts, and Start Up   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 3; CON 205 minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students will prepare for and practice a) taking the State of Michigan Builders License Exam, b) writing legal construction contracts for projects and c) producing a business plan for starting a residential construction business. This course is approved by the State of Michigan as part of the pre-licensure education requirements. The title of this course was previously Residential Construction Licensing, Contracts, and Start Up.

CON 230   Construction Production   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 3; CON 205 minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students are introduced to the production aspect of light frame construction. Students will be using house plans to estimate materials, schedule trades, and prepare quality control "punch lists" based upon materials and trades used. Topics include construction materials, estimating, scheduling and quality control. The title of this course was previously Residential Construction Production.

CON 235   Construction - Building Codes and Prints   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 3
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course covers light frame construction building codes, print reading and reproduction. Students will discuss the State of Michigan Residential Building codes, plan development, and design. This course is part of the sixty contact hours required for the State of Michigan builders license.

CON 240   Construction - Advanced Finishes and Techniques   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 3; CON 205 minimum grade "C"
15 lecture, 60 lab, 0 clinical, 0 other, 75 total contact hours

In this course, students will learn proper installation techniques for interior trim systems including stairs, handrails, crown molding, cabinetry detailing, and built-up trim details. The title of this course was previously Advanced Trim and Interior Finish Techniques.

CON 247   Sustainable Building Practices   4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 2; CON 180 minimum grade "C", may enroll
                               concurrently
30 lecture, 75 lab, 0 clinical, 0 other, 105 total contact hours

Students will relate green building theory and practice, learned in previous courses, to the processes of weatherizing and creating energy-efficient structures. With an emphasis on minimizing heat and energy loss and water usage, students will apply these processes on the construction site.

CON 250   Cabinet Shop Management and Fundamentals   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; CON 175 minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students learn about job cost tracking, mechanical detailing, and plan execution.

CON 255   Construction Concrete and Masonry   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 3; CON 104 minimum grade "C"
15 lecture, 60 lab, 0 clinical, 0 other, 75 total contact hours

This course covers concrete and masonry finishes for homes and light industrial buildings to include foundations, slabs, brick, block and stone. Construction theory in class is included to support lab activities on and offsite. Students will discuss layout techniques, materials required, and proper safety regulations for completing concrete and masonry projects per industry standards. This course was previously Residential Construction Concrete and Exterior Finishes.

CON 260   Construction Remodeling   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 3; CON 205 minimum grade "C"
15 lecture, 60 lab, 0 clinical, 0 other, 75 total contact hours

In this course, students will learn about light frame construction layouts and details needed for remodeling projects. Topics include existing structure layout, demolition, rebuilding, and finishing techniques. The title of this course was previously Residential Construction Remodeling.

CON 270   Construction Mechanicals   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 3
30 lecture, 30 lab, 0 clinical, 0 other, 60 total contact hours

This course covers the mechanical features installed in homes and light industrial buildings. Construction theory in class is included to support lab activities on and offsite. Students will discuss terminology, material recognition, and state requirements for identifying and troubleshooting home and light industrial utility and mechanical systems.

CON 274   CON Co-op Education II   1-3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; CON 174; consent required
0 lecture, 0 lab, 0 clinical, 120 other, 120 total contact hours

In this course, students gain skills from a new experience in an approved, compensated, industry-related position. Together with the instructor and employer, students set up work assignments and learning objectives to connect classroom learning with career-related work experience. This is the second of two co-op courses.

CON 275   Cabinetry and Millwork IV   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; CON 175 minimum grade "C"
15 lecture, 45 lab, 0 clinical, 0 other, 60 total contact hours

Using various finishing materials (oil-based, shellac, lacquer, modern resin, catalyzed and multi-part systems) students will learn how to prepare cabinetry and millwork materials for finishing. The course will include detailed explanations of wiped, rolled, brush and spray applications of cabinet and furniture finishes. Students will learn finishing techniques using proper industry set up and safety standards. The title of this course was previously Finishing Concepts and Processes.

Criminal Justice   CJT

CJT 100   Introduction to Criminal Justice   **3 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students examine the criminal justice system as a method of social control in the United States. They will examine crime definitions and crime counting, as well as the responsibility of each of the components of the criminal justice system in responding to crime.

CJT 110   Emergency Telecommunication   **5 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6; consent required
80 lecture, 0 lab, 0 clinical, 0 other, 80 total contact hours

The goal of this course is to provide participants with basic skills in public safety communication. Communication skills, telephone and dispatch techniques, legal issues and CPR skills are some of the topics covered in the course.

CJT 111   Police/Community Relations   **3 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

The role of the individual officer and the department in achieving and maintaining public support is studied. Topics include: customs, culture, and problems of ethnic and minority groups. Public information services, and techniques for the alleviation of community tensions are also covered.

CJT 120   Criminal Justice Ethics   **3 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This is a normative ethics course that examines values and issues relevant to success in the criminal justice area. The course includes personal values clarification, historical ethics and applied ethics.

CJT 154   Everyday Law: Law and Civil Liberties   **3 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students will be introduced to our legislative process and the United States legal system. Beginning with a brief overview of constitutional foundations, students will explore lawmaking and the institutions and process used to enforce laws. Topics covered will include individual rights and liberties and the everyday application of law.

CJT 160   Criminal Justice Constitutional Law   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course is a comprehensive examination of key provisions of the US Constitution, with emphasis on those areas affecting the rights and privileges of individual citizens
(e.g. those imparting procedural law). A historical approach is adopted to give students a complete understanding of the mutable nature of the Constitution and those factors which impact it. This course was previously CJT 112.

CJT 170   Domestic and International Terrorism   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; CJT 100
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course is an in-depth study of international terrorism and domestic terrorism, with a focus on how the Federal and State governments respond to and investigate terrorism. The roots of terrorism, types, causes, strategies, targets and weapons will be covered. The course will include an overview of how other crimes are used by terrorists for funding and the impact of media coverage. Students will engage in practical exercises such as mock response to threats of terrorism.

CJT 208   Criminal Evidence and Procedure   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course is an examination of the criminal justice judicial process, including the roles of defense attorneys, prosecutors and judges. It emphasizes the rules and laws governing the admissibility of evidence, as well as the law governing criminal procedure.

CJT 209   Criminal Law   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course students will examine the history and philosophy of the development of the criminal law system in the United States. Students will exam in depth the elements of traditional crimes, based upon the common law and the Model Penal code. Topics include the theoretical challenges and defenses to criminal liability.

CJT 221   Law Enforcement Training   16 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; minimum 45 credits with 2.0 GPA and pass MCOLES test;
consent required
487 lecture, 410 lab, 0 clinical, 0 other, 897 total contact hours

This course is an approved Police Academy for the State of Michigan. The Michigan Commission on Law Enforcement Standards (MCOLES) Policy and Procedure Manual, WCC Police Academy Daily Rules and Regulations, and the WCC Student Handbook will govern student conduct. The Police Academy is structured as an adult learning experience and will require significant self-discipline on the part of the student. Students will be held to this same code of ethics as sworn law enforcement officers.

CJT 223   Juvenile Justice   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

The course is an in-depth examination of the juvenile justice system, including law enforcement, courts and corrections. It emphasizes the history and philosophy of a separate justice system. This course also surveys the theories of causation of juvenile delinquency, juvenile victimization, and intervention strategies.

CJT 224   Criminal Investigation   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

Students will be introduced to the science of criminal investigation. They will become familiar with the methodology of crime scene investigations, evidence collection, preservation, and analysis. Included are the rudiments of follow-up investigations, interviews, interrogations and report writing. Techniques applicable to investigation of specific crimes will be highlighted.

CJT 225   Seminar in Criminal Justice   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course provides a unifying experience and evaluation of criminal justice systems, policies and practices. Preparation of a concluding research paper is required for this course. The focus is on analytical thought processes and problem-solving.

Culinary Arts   CUL

CUL 100   Introduction to Food Service and Hospitality Industry   **2 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

In this course, students will be introduced to the hospitality industry including high quality customer service, servant leadership and sustainability. Students will trace the industry's history from founding culinarians and innovators through today's top industry leaders. Resources about professional pathways and organizations in the hospitality industry will be explored. This class includes off-campus tours, case studies, trend identification and a career opportunity focus. The title of this course was previously Introduction to Culinary Arts Industry.

CUL 104   Baking Science   **2 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 2
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

In this entry-level course, students are introduced to the basics of baking science and prepared for lab courses. Emphasis is placed on how key ingredients function and interact in the baking process. Students will recognize how changes in ingredients and/or processes affect baked products.

CUL 110   Sanitation and Hygiene   2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

This course communicates the importance of sanitation to the hospitality worker: layman's bacteriology, communicable diseases, food poisoning, pest control, cleaning and sanitizing, and personal hygiene. Students who complete this course and pass the exams receive National and State Sanitation Certification. CUL 110 is a requirement in all of the culinary programs and should be taken the first semester a student begins any culinary program.

CUL 114   Fundamentals of Baking   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; CUL 104 and CUL 110, minimum grade "C"; may enroll
                                  concurrently in CUL 110
15 lecture, 60 lab, 0 clinical, 0 other, 75 total contact hours

This course introduces students to basic theory, practices, and production techniques required to produce quality baked goods, such as yeast raised and quick breads, pies, cakes, and cookies. Emphasis is placed on time management, safe food handling, storage, and proper utilization of ingredients and equipment. The title of this course was previously Baking I.

CUL 115   Fundamentals of Pastry   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; CUL 104 and CUL 110, minimum grade "C"; may enroll
                                  concurrently in CUL 110
15 lecture, 60 lab, 0 clinical, 0 other, 75 total contact hours

In this course, students are introduced to contemporary pastries applicable to today's food service industry. Emphasis is placed on pastry production techniques including demonstrations and practical applications of pate a choux specialties, gateaus, sauces, custards, mousses, churned and still frozen desserts. Students will also be introduced to plated dessert concepts and construction. The title of this course was previously Pastry I.

CUL 116   Fundamental Culinary Principles   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 2; CUL 100 and CUL 110, minimum grade
                                  "C"; may enroll concurrently in both courses
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students are introduced to the fundamental language, concepts and theories of basic cookery. Students will develop culinary professionalism in various settings. Emphasis is placed on cookery theories and the purchasing and receiving of seasonal ingredients. Students will use time management, organizational and work coordination techniques as well as problem-solving skills. This course provides a conceptual foundation needed for the laboratory cooking courses.

CUL 118   Principles of Nutrition   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 2
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students are introduced to the basic principles of nutrition, health, and the relationship to foodservice. Students study nutrients including functions, digestion, absorption, food sources, and metabolism. Menu development focuses on the use of nutritious foods following the USDA Food Pyramid. Health, disease, food trends, and sustainable food systems are discussed in relationship to a healthy lifestyle.

CUL 120   Classical Kitchen Operations   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 2; CUL 110 minimum grade "C", may enroll concurrently
15 lecture, 90 lab, 0 clinical, 0 other, 105 total contact hours

This course focuses on skills and techniques used in basic classical cooking. Students will develop an understanding of ingredients, nutrition, seasonality, and plate presentation. Student will develop and execute the planning, preparation, and timing of a quality multi-course meal. This course contains material previously taught in CUL 111. The title of this course was previously Culinary Skills.

CUL 121   Modern Kitchen Operations   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 2; CUL 110 minimum grade "C", may enroll concurrently
15 lecture, 90 lab, 0 clinical, 0 other, 105 total contact hours

In this course, students will apply culinary concepts, terminology, and culinary techniques involved in the production of various food and menu items. Students will rotate through stations and be involved in all aspects of a commercial kitchen. Emphasis will be placed on student development in the cookery process, introduction to a la carte style modern kitchen operations, and teamwork concepts to gain experience of a restaurant kitchen. This course contains material previously taught in CUL 111. The title of this course was previously Introduction to Food Preparation Techniques.

CUL 124   Baking II   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; CUL 114
30 lecture, 45 lab, 0 clinical, 0 other, 75 total contact hours

This course builds on principles and production techniques learned in Baking I, CUL 114. Students learn more complex production skills in the preparation of sweet and savory specialty breads, chiffon's mousse, custard pies, egg foam based cakes, pate choix products, doughnuts, Danish and puff pastry. Students with experience equivalent to CUL 114 may contact the instructor for permission to waive the prerequisite.

CUL 125   Pastry II   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; CUL 115 or CUL 124
30 lecture, 45 lab, 0 clinical, 0 other, 75 total contact hours

The student continues to learn contemporary desserts and pastries. Emphasis is placed on holiday desserts, hot and cold plated desserts, confectionery, chocolate and sugar show pieces, and management and interpersonal skills.

CUL 132   Basic Cake and Wedding Cake Design   **2 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 2; CUL 110 minimum grade "C", may enroll concurrently
15 lecture, 45 lab, 0 clinical, 0 other, 60 total contact hours

The course is designed to teach elementary cake decorating techniques. Students will learn proper preparation for frosting and will demonstrate a variety of applications. The course progresses into advanced techniques including rolled fondant, lace pieces, ruffles, borders, gum paste flowers, and wedding cake construction. CUL 130 and CUL 131 have been combined to form CUL 132.

CUL 135   International Cuisine and Culture: A Study Abroad   1 credit

Level I Prerequisites: Academic Reading and Writing Levels of 6
15 lecture, 10 lab, 0 clinical, 0 other, 25 total contact hours

The course will focus on different aspects of the cuisine and culture of an international destination. Emphasis will be placed on how food and art influence lifestyle and culture. Students will explore how geographical and cultural components shape the use of different food products, cooking methods, service styles and other factors that have led to the current cuisine and culture.

CUL 140   Bakery Management and Merchandising   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 2; CUL 110, CUL 114 and CUL 115, minimum grade "C"
30 lecture, 45 lab, 0 clinical, 0 other, 75 total contact hours

This course introduces students to management and merchandising concepts utilized in bakeries. Emphasis is placed on cost control, sales concepts, customer service, and product presentation. Students will acquire hands-on experience in retail sales.

CUL 145   Introduction to Dining Room Protocol   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 2; CUL 110 minimum grade "C", may enroll concurrently
15 lecture, 90 lab, 0 clinical, 0 other, 105 total contact hours

Students in this course will be introduced to the service skills required in a restaurant that is open to the public. This live laboratory experience provides students with real world, hands-on experience in a learning setting. This unique restaurant allows students an opportunity to practice customer relations and management techniques while role-playing scenarios. Students enrolled in this course will be prepared to earn a nationally recognized alcohol service certification.

CUL 150   Food Service Management and Supervision   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 2; CUL 100 minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course provides students an opportunity to gain a deeper understanding of management theory and supervision techniques related to operational management. This beginning course explores contemporary issues and trends managers face in today's hospitality operations. Students will be given the opportunity to earn nationally recognized certification for professional portfolio development. The title of this course was previously Food Service Management.

CUL 151   Food Service Marketing   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; CUL 110, may enroll concurrently
30 lecture, 83 lab, 0 clinical, 0 other, 113 total contact hours

Students demonstrate personal sales strategies as they operate a full service restaurant lab. Guest speakers, tours, and classroom discussions will follow the lab covering topics related to functions of marketing such as promotion, advertising, and public relations.

CUL 174   CUL Co-op Education I   1-3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; 15 credit hours in program; consent required
10 lecture, 0 lab, 0 clinical, 120 other, 130 total contact hours

In this course students gain skills from a new experience in an approved, compensated, culinary arts-related position. Together with the instructor and employer, students set up work assignments and learning objectives to connect classroom learning with career-related work experience. This is the first of two co-op courses.

CUL 205   Pastry Arts and Design   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 2; CUL 110, CUL 114 and CUL 115, minimum grade "C"
15 lecture, 60 lab, 0 clinical, 0 other, 75 total contact hours

In this advanced course, students are introduced to the art of pastry design. Emphasis is placed on chocolate tempering, chocolate confections, chocolate, sugar and pastillage display pieces.

CUL 210   Advanced Kitchen Operations: Garde Manger   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 2; CUL 120 and CUL 121, minimum grade "C"
30 lecture, 45 lab, 0 clinical, 0 other, 75 total contact hours

In this course, students are introduced to the classical food preparation of the cold food kitchen, presentation and design of platters and a center showpiece. Students will explore the history of cold food production and identify methods related to preparing food items served cold. Applying advanced culinary techniques, sanitation practices in preparing a variety of classical cold foods, and modernized presentation will be emphasized. The title of this course was previously Gardemanger.

CUL 211   Advanced Bread Production   4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 2; CUL 110 and CUL 114, minimum grade "C"
30 lecture, 60 lab, 0 clinical, 0 other, 90 total contact hours

In this course, students are introduced to advanced bread production techniques. The production of laminated yeast doughs, advanced yeast breads, sourdough starters, sourdough breads, pre-fermented doughs, international breads and display pieces are emphasized.

CUL 215   Advanced Cake Decorating   2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 2; CUL 110 and CUL 132, minimum grade "C"
15 lecture, 45 lab, 0 clinical, 0 other, 60 total contact hours

This class is designed for students to learn the advanced techniques of cake decorating. Students will be introduced to new skills such as airbrushing, cake construction and mold making. Students will continue to advance their skills in piping, gumpaste and fondant work.

CUL 220   Organization/Management of Food Systems   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; CUL 100
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

A study of the processes of recruitment, selection, training and evaluation, collective bargaining and human relations techniques in personnel management. Theoretical applications are developed and discussed through actual case studies.

CUL 224   Principles of Cost Control   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 2
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

Forecasting and cost control exercises are a major part of this course. Students are involved in analyzing all costs related to food, beverage, labor and supplies as well as discussions and exercises related to purchasing, receiving, and storage.

CUL 226   Advanced Dining Room and Beverage Management   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 2; CUL 224 minimum grade "C", may enroll
                            concurrently
15 lecture, 90 lab, 0 clinical, 0 other, 105 total contact hours

Students in this course will operate a full service restaurant that is open to the public. This unique laboratory-restaurant allows students an opportunity to perfect professional customer relations and management techniques under normal working conditions. Additional emphasis will be placed on beverages and beverage service along with service of specialty foods and styles of service.

CUL 227   Advanced Culinary Techniques   2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; CUL 230 and CUL 231, minimum grade "C+"
30 lecture, 30 lab, 0 clinical, 0 other, 60 total contact hours

This course is a culmination of experiences for the advanced student. Focus will be placed on the basic principles one must master to become a skilled culinarian. Students are presented with an opportunity to exercise the principles and solid fundamentals of professional cooking through competitive events. The competitor (student) is further challenged in his or her creativity and individuality with an ever present focus on simplicity and elegance.

CUL 230   Advanced Kitchen Operations: American Regional   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 2; CUL 114, CUL 120, and CUL 121,
                            minimum grade "C"
15 lecture, 90 lab, 0 clinical, 0 other, 105 total contact hours

This course will focus on the advance application of culinary technique, plate presentation, and quality food production. Students will explore and define flavor profiles, modernized attributes of food preparation and plate presentation of America Regional Cuisine. Professional kitchen management, culinary technique, and organizational skill implementation will be emphasized in relation to the study of regional foods of the United States. The title of this course was previously Quantitly Food Production.

CUL 231   Advanced Kitchen Operations: Global Cuisine
3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 2; CUL 114, CUL 120, and CUL 121, minimum grade "C"

15 lecture, 90 lab, 0 clinical, 0 other, 105 total contact hours

In this course, students have the opportunity to advance their skills in high quality food production with exposure to food preparation of different cultures and cuisines of the world. Students will prepare, evaluate and present traditional international dishes focusing on cultural flavor profiles and indigenous ingredients. Additional fundamentals for this course include culinary technique refinery, management, and organizational skills relating to production of global foods. The title of this course was previously A La Carte Kitchen.

CUL 250   Principles of Beverage Service
3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6

45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course is designed to teach students techniques in beverage production and service as well as the ability to identify strategies for effective management and marketing of beverage operations. Emphasis will be placed on point of origin, mixology and regulations of beer, wine, and spirits. Comparative tastings are a major component of this course.

CUL 260   Catering and Banquet Production Management
3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Completion of the Culinary and Hospitality Management program or CUL 227, may enroll concurrently; consent required

15 lecture, 60 lab, 0 clinical, 0 other, 75 total contact hours

This advanced course provides the graduate culinary arts degree student with the ability to display knowledge of a variety of catering operations. This will include planning, organizing, marketing and executing receptions, parties, and special events.

Custom Cars & Concepts   CCC

CCC 200   Custom Auto Body Technician I
4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Completion of Auto Body Repair certificate with minimum grade of "B" or better in each course

60 lecture, 45 lab, 0 clinical, 0 other, 105 total contact hours

This course was created for students who are interested in pursuing a career in the specialty car market of hot rods, customs and concept vehicles. Students will build on skills in prerequisite courses to evaluate their skills, while learning the techniques and applications of custom car building. Students will learn to install and modify many aftermarket products such as hinge kits and remote door openers. Other areas of instruction will include custom speaker enclosures, interior modifications and the process used to achieve show car quality sheet metal fit and finish.

CCC 201   Custom Fabrication and Chassis Design I
4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Completion of Auto Body Repair certificate with minimum grade of "B" or better in each course

60 lecture, 45 lab, 0 clinical, 0 other, 105 total contact hours

This course is designed for the student interested in pursuing a career in chassis design and assembly as well as metal fabrication as it pertains to the world of custom vehicles. In this class, students will build their skills and proficiency using the tools of the trade such as the iron worker, hand brake, foot sheer and Beverly sheer. Subjects covered will include installing air bag suspension, choosing wheel/tire offset combinations, raising and lowering suspension, as well as fabricating various custom parts needed to build a custom car.

CCC 220   Custom Auto Body Technician II   **4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; Completion of Auto Body Repair certificate with minimum grade of "B" or better in each course
60 lecture, 45 lab, 0 clinical, 0 other, 105 total contact hours

In this class, emphasis will be placed on the student's ability to perform body work related procedures that help to achieve a suitable substrate for the application of a show quality paint job. Topics included are the removal of factory body imperfections such as stamping marks and spot weld seams. Techniques involved in shaving door handles, fine tuning of body panel gaps, and processes involved with the texture removal and surface preparation of plastics used in the automotive industry will also be covered. Instructors will also provide information on advanced paint operations such as "ghosting" of graphics, "smoking" of headlights/taillights and special sanding/buffing procedures as related to the final appearance of a custom car.

CCC 221   Custom Fabrication and Chassis Design II   **4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; Completion of Auto Body Repair certificate with minimum grade of "B" or better in each course; CCC 201 and WAF 215 minimum grade "B"
60 lecture, 45 lab, 0 clinical, 0 other, 105 total contact hours

The student will continue to build on skills acquired. Class projects will be based on the design and fabrication of suspension components, and the extensive amount of "one of a kind" parts needed to complete a custom vehicle. Working in a team environment, students will establish project guidelines, develop problem-solving skills, and strive to achieve team goals in a timely manner. Past projects such as the "Summer School Chevelle" have been featured on The Learning Channels' "Rides." Other Custom Cars & Concepts vehicles have gained national recognition by receiving awards at the legendary Detroit Autorama, and have been showcased by Ford, Dodge, and General Motors at the Specialty Equipment Market Association (SEMA) show in Las Vegas.

CCC 240   Custom Auto Body Technician III   **4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; Completion of Auto Body Repair certificate with minimum grade of "B" or better in each course; CCC 200 and CCC 220, minimum grade "B"
60 lecture, 45 lab, 0 clinical, 0 other, 105 total contact hours

The object of this course is to provide a platform on which students can start to apply the skill and experience they have acquired in prior courses. Students will demonstrate their proficiency in the design, assembly, and completion of show quality vehicles. Prior projects have been featured in national media publications such as News Week, Car and Driver, Hot Rod, and television programs that include The Learning Channels' "Rides." Teamwork, establishing project guidelines, time management, developing problem-solving skills, goal setting and the achievement of these goals will be emphasized.

CCC 241   Custom Fabrication and Chassis Design III   **6 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; Completion of Auto Body Repair certificate with minimum grade of "B" or better in each course; CCC 201 and WAF 215, minimum grade "B"
75 lecture, 75 lab, 0 clinical, 0 other, 150 total contact hours

Students taking this course will continue to develop skills and gain valuable information as it relates to the completion of a project vehicle. Areas of study include fastener selection, electrical system upgrades, ride tuning of suspension, brakes, steering, and final safety inspections. Working with staff and other team members, students will devise a promotional plan, aid in the set up, display and help organize the project vehicles' debut.

CCC 260   Custom Auto Body Technician IV   **6 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; Completion of Auto Body Repair certificate with minimum grade of "B" or better in each course; CCC 200 and CCC 220, minimum grade "B"
75 lecture, 75 lab, 0 clinical, 0 other, 150 total contact hours

Students taking this course will continue to build on fundamental skills that they have developed in the construction of show quality automobiles. Various topics associated with the completion of a project car will be covered. These topics include, but are not limited to, final assembly, fit and finish, and final detailing of the project vehicle. In addition to these course objectives, students will aid in the development of a promotional plan for the vehicle, and help in the coordination of venue set up and display.

CCC 290　Mobile Electronics　　　　　　　　　　　　　　　　　**4 credits**

Level I Prerequisites:　Academic Reading and Writing Levels of 6; ABR 111 and ABR 135, minimum grade "C" or ASV 152 minimum grade "C"

45 lecture, 60 lab, 0 clinical, 0 other, 105 total contact hours

This course covers the principles of mobile automotive electronics and integration of aftermarket electrical upgrades. The emphasis is centered on the planning and installation of performance audio, HID LED lighting, remote start and navigation systems as well as basic harness design and layout. It provides practical and theoretical experience necessary to fully understand the tools, equipment and organization of many custom electrical projects. Students will be prepared to take the Basic Installation Technician Exam to become a Mobile Electronics Certified Professional.

Dance　　　　　　　　　　　　　　　　　　　　　　　　　**DAN**

DAN 101　Beginning Modern Dance I　　　　　　　　　　　**1 credit**

Level I Prerequisites:　No Basic Skills

0 lecture, 0 lab, 0 clinical, 30 other, 30 total contact hours

This course introduces and applies basic modern dance exercises and steps. This course includes the opportunity to perform a modern dance piece in an end-of-term recital.

DAN 102　Beginning Modern Dance II　　　　　　　　　　**1 credit**

Level I Prerequisites:　No Basic Skills

0 lecture, 0 lab, 0 clinical, 30 other, 30 total contact hours

This course introduces and applies complex modern dance exercises and steps. This course includes the opportunity to perform a modern dance piece in an end-of-term recital. This course may be completed for credit up to a maximum of two times.

DAN 103　Beginning Tap Dance I　　　　　　　　　　　　**1 credit**

Level I Prerequisites:　No Basic Skills

0 lecture, 0 lab, 0 clinical, 30 other, 30 total contact hours

This course introduces and applies basic tap dance exercises and steps. This includes the opportunity to perform a tap dance piece in an end-of-term recital.

DAN 104　Beginning Tap Dance II　　　　　　　　　　　　**1 credit**

Level I Prerequisites:　No Basic Skills; DAN 103 minimum grade "C"

0 lecture, 0 lab, 0 clinical, 30 other, 30 total contact hours

This course introduces and applies complex tap dance exercises and steps. This course includes the opportunity to perform a tap dance piece in an end-of-term recital.

DAN 105   Beginning Jazz Dance I   **1 credit**

Level I Prerequisites: No Basic Skills
0 lecture, 0 lab, 0 clinical, 30 other, 30 total contact hours

This course introduces and applies basic jazz dance exercises and steps. This course includes the opportunity to perform a jazz dance piece in an end-of-term recital. This course may be completed for credit up to a maximum of two times.

DAN 106   Beginning Jazz Dance II   **1 credit**

Level I Prerequisites: No Basic Skills
0 lecture, 0 lab, 0 clinical, 30 other, 30 total contact hours

This course introduces and applies more complex jazz dance exercises and steps. This course includes the opportunity to perform a jazz dance piece in an end-of-term recital.

DAN 107   Beginning Ballet I   **1 credit**

Level I Prerequisites: No Basic Skills
0 lecture, 0 lab, 0 clinical, 30 other, 30 total contact hours

This course introduces and applies the basic ballet barre and floor exercises and vocabulary. This course includes the opportunity to perform a ballet dance piece in an end-of-term recital. This course may be completed for credit up to a maximum of two times.

DAN 108   Beginning Ballet II   **1 credit**

Level I Prerequisites: No Basic Skills
Level II Prerequisites: DAN 107 minimum grade "C"
0 lecture, 0 lab, 0 clinical, 30 other, 30 total contact hours

This course introduces additional vocabulary and more complex floor and barre exercises than Beginning Ballet I. This course also includes the opportunity to perform a ballet dance piece in an end-of-term recital. This course may be completed for credit up to a maximum of two times.

DAN 110   African Dance I   **1 credit**

Level I Prerequisites: No Basic Skills
0 lecture, 0 lab, 0 clinical, 30 other, 30 total contact hours

This course introduces and applies basic African dance exercises and steps. This course includes the opportunity to perform an African dance piece in an end-of-term recital.

DAN 111   Hip Hop Dance   **1 credit**

Level I Prerequisites: No Basic Skills
0 lecture, 0 lab, 0 clinical, 30 other, 30 total contact hours

This course introduces and applies Hip Hop dance exercises and steps. This course includes the opportunity to perform a Hip Hop dance piece in an end-of-term recital. The title of this course was previously Popular Dance Forms.

DAN 112   Hip Hop Dance II   **1 credit**

Level I Prerequisites: No Basic Skills; DAN 111 minimum grade "C"
0 lecture, 0 lab, 0 clinical, 30 other, 30 total contact hours

This course introduces and applies complex Hip Hop dance exercises and steps. Students will perform an advanced Hip Hop dance piece in an end of semester performance.

DAN 122   Ballroom Dance I   **1 credit**

Level I Prerequisites: No Basic Skills
0 lecture, 0 lab, 0 clinical, 30 other, 30 total contact hours

This course introduces and applies basic ballroom dance exercises and steps.

DAN 123   Dance Exercise I   **1 credit**

Level I Prerequisites: No Basic Skills
0 lecture, 0 lab, 0 clinical, 30 other, 30 total contact hours

This is an activity class focusing on fitness skills in which students participate in dance-related exercise. Based on the students' individual skill levels, they will learn correct techniques that will increase flexibility, mobility and strength. Students will also learn the relationship of exercise to health as they pursue their individual fitness goals. This course may be completed for credit up to a maximum of two times.

DAN 180   Dance Appreciation: The World of Dance   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

A lecture demonstration course defining dance and its religious, social, cultural, historical, sexual, and artistic qualities, this course will include the viewing of video documentation, discussion, research, and demonstration of a chosen dance form. This is not a dance performance class but rather an academic study of the history and societal role of dance.

DAN 200   Advanced Performance   2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; DAN 101, DAN 105 and DAN 107, minimum grade "C"; each DAN course may enroll concurrently
0 lecture, 0 lab, 0 clinical, 30 other, 30 total contact hours

This course provides the experienced dancer with the tools and language of choreography. Using these tools, the student will create and present dance works. The technical aspects of production will be introduced and utilized. This course culminates in an end-of-term production.

DAN 210   African Dance II   1 credit

Level I Prerequisites: No Basic Skills; DAN 110 minimum grade "C"
0 lecture, 0 lab, 0 clinical, 30 other, 30 total contact hours

This course is designed to further students' dance vocabulary using advanced African dance movements and traditional African rhythms employed in boogie, jazz, hip-hop, modern and Latin dance. This course includes the opportunity to perform an African dance piece in an end-of-term recital.

DAN 222   Ballroom Dance II   1 credit

Level I Prerequisites: No Basic Skills; DAN 122 minimum grade "C"
0 lecture, 0 lab, 0 clinical, 30 other, 30 total contact hours

Students will perfect the basics of ballroom dance. They will learn advanced patterns in waltz, foxtrot, cha-cha, lindy-hop, swing, samba and hustle. Other dances may be introduced at the teacher's discretion. This course is designed for those who have previous ballroom dance experience.

DAN 223   Dance Exercise II   1 credit

Level I Prerequisites: No Basic Skills; DAN 123
0 lecture, 0 lab, 0 clinical, 30 other, 30 total contact hours

This is a continuation of an activity class in which students participate in the exploration of diverse dance-related exercises and techniques. Students will explore a higher level of exercises with increased intensity for the development of physical flexibility, mobility and strength. Students will also explore the relationship of exercise to health.

Dental Assisting   DEN

DEN 102   Managing Safe Practice in Dentistry   1 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to Dental Assisting program
15 lecture, 9 lab, 0 clinical, 0 other, 24 total contact hours

This course addresses types of diseases and their transmission, the application of OSHA and CDC guidelines to dentistry, as well as the management of hazardous waste in the dental office. Students gain practical experience in the operation of sterilization equipment and disinfection techniques, as well as methods for the safe management and manipulation of various substances used in the dental treatment room.

DEN 106   Biomedical Science for Dental Assistants   **2 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to Dental Assisting program
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

This course covers the formation and eruption of the teeth, cell tissue and organ development, nervous system, trigeminal nerve, and types and uses of local and general anesthesia.

DEN 107   Oral Anatomy   **2 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to Dental Assisting program
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

This is an introductory course in head and neck anatomy. Topics include intraoral and extraoral structures of the skull and face, including bones, muscles, and soft tissue. Tooth surface annotation, cavity classification, occlusion and malocclusion are emphasized.

DEN 108   Dental Radiography   **2 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to Dental Assisting program; DEN 102 minimum grade
                              "C", may enroll concurrently
15 lecture, 30 lab, 0 clinical, 0 other, 45 total contact hours

The course introduces concepts of radiography as they are applied to dentistry. Principles of radiation physics, health and safety factors effecting radiographic images, and quality control measures are examined. Students then use this knowledge to prepare radiographic images. The content of this course, when combined with DEN 128, satisfies the Administrative Rules of the Michigan Board of Dentistry educational requirements.

DEN 110   Basic Clinical Dental Assisting   **4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to Dental Assisting program; DEN 102 minimum grade
                              "C", may enroll concurrently
45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

This course is an introduction to dental assisting. It provides an overview of the history of dentistry, professional organizations, ethics, and the role of the dental health team. Students are introduced to the treatment room, equipment, and basic procedures. The application of OSHA and CDC guidelines used in four-handed dentistry are emphasized.

DEN 112   Dental Materials   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to Dental Assisting program
30 lecture, 45 lab, 0 clinical, 0 other, 75 total contact hours

This course is designed to give dental assisting students theoretical knowledge of the uses and properties (chemical and physical) of the most commonly used dental materials. Students will gain laboratory and clinical experience in the manipulation, practical application and safe use of common dental materials and equipment in accordance with OSHA and CDC guidelines.

DEN 118   Preventive Dentistry   2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to Dental Assisting program; DEN 106 and DEN 107, minimum grade "C"
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

This course provides dental assisting students with a foundation in preventive dentistry. Methods to ensure the dental health of patients, including instruction in oral hygiene and proper nutrition, are addressed. Etiology, prevention, and control of dental caries are also emphasized. DEN 109 and DEN 119 have been combined to form DEN 118.

DEN 120   Oral Diagnosis   1 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; DEN 102 and DEN 107, minimum grade "C"
15 lecture, 15 lab, 0 clinical, 0 other, 30 total contact hours

This theoretical course provides the student with the necessary knowledge and tools to obtain diagnostic data and the recording of this data. The student gains practical experience in common charting techniques and records management.

DEN 128   Dental Radiography Practicum   1 credit

Level I Prerequisites: Academic Reading and Writing Levels of 6; DEN 108 minimum grade "C", may enroll concurrently
0 lecture, 22.5 lab, 22.5 clinical, 0 other, 45 total contact hours

This course provides students with both laboratory and clinical experience in producing dental radiographs. Procedures for infection control and maintenance of patient records are emphasized. Students gain experience with mannequins in the laboratory, and apply these skills to patients in the clinic. The content of this course, when combined with DEN 108, meets the Administrative Rules of the Michigan Board of Dentistry educational requirements.

DEN 129   Oral Pathology and Dental Therapeutics   2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; DEN 106 and DEN 107, minimum grade "C"
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

This course is a study of diseases of teeth and supporting structures, oral pathology, and systemic diseases and their relationship to dental health. Dental assistant students gain experience in critical evaluation of a patient's health status and apply the essential skills needed to assist in common dental/medical emergencies. Various drugs and their effect on medical/dental care also are studied.

DEN 130   Clinical Practice   2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; DEN 108, DEN 110, DEN 120, minimum grade "C"; DEN 120 may enroll concurrently
Level II Prerequisites: current CPR card
0 lecture, 0 lab, 130 clinical, 0 other, 130 total contact hours

This course provides Pathway I option A students with clinical application of all previous knowledge as they gain clinical experience in the WCC Dental Clinic and in the University of Michigan Dental Clinic. Students assist during basic preventive and operative procedures, monitor vital signs, apply OSHA and CDC guidelines, sterilize instruments and manage patient records.

DEN 131   Principles of Dental Specialties   **4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; DEN 110 minimum grade "C"
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This course introduces students to the role of the dental assistant in dental specialties. Latest concepts in each specialty are presented by dental specialists.

DEN 202   Advanced Clinical Practice   **2 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; DEN 130 minimum grade "C" or DEN 133 with grade "P"; DEN 133 may enroll concurrently
Level II Prerequisites: current CPR card
0 lecture, 0 lab, 195 clinical, 0 other, 195 total contact hours

This course builds on the student's clinical experience of DEN 130/133. The student develops advanced clinical skills in areas of interest. Students must complete two rotations at different clinical sites and provide evidence of such a rotation.

DEN 204   Advanced Functions   **4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; Pathway I students - DEN 202 minimum grade "C", may enroll concurrently; or Pathway II students - Admission to Dental program
Level II Prerequisites: current CPR card
15 lecture, 105 lab, 15 clinical, 0 other, 135 total contact hours

This course is designed to provide dental assisting students with knowledge and skill in performing legally delegated intra-oral functions. In Michigan, the legal duties of the Registered Dental Assistant are outlined in the Administrative Rules of the Michigan Board of Dentistry.

DEN 205   Expanded Duties for the RDA   **2 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
Level II Prerequisites: current RDA license
15 lecture, 45 lab, 0 clinical, 0 other, 60 total contact hours

This course is designed for the current registered dental assistant in the State of Michigan who must meet the requirements of the Public Health Code Section 333.16611.

DEN 212   Dental Practice Management   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; DEN 107 minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course provides an overview of the dental business office. Topics include styles of management, office management software, office accounting, and business office equipment including computers. Interpersonal communication, both written and oral, are emphasized. Students develop skills in interviewing and writing letters of application and a resume.

DEN 230   Alternative Dental Assisting Education Project   **9 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to Dental Assisting program - Pathway II students
30 lecture, 16 lab, 600 clinical, 0 other, 646 total contact hours

This course is designed specifically for the on-the-job trained dental assistant who has been admitted to the Dental Assisting Program with advanced standing after successfully passing all three components of the Dental Assistant National Board CDA Examination. The student demonstrates clinical, laboratory, and radiographic skills in their offices of employment. Students also observe two specialty dental practices.

Drama   DRA

DRA 152   Acting for Theatre I   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course is an introduction to acting skills and techniques through improvisation and the presentation of dramatic scripts. Voice projection, staging, character development and emotional expression are explored in theatre games, monologues and scenes. The course will appeal to anyone interested in developing acting, dramatic staging, presentation and/or communication skills. All skill levels are welcome.

DRA 170   Theatre Festival   **2 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

Students will travel to a professional theatre festival such as the Stratford Theatre Festival or the Shaw Theatre Festival in Ontario to attend plays, participate in class discussions, and do preparation for an essay assignment. The course will appeal to those with an interest in various aspects of theatrical performance, including acting, directing, design, production, and literature. A back-stage tour of the facilities will be included. There will be additional expenses for travel.

DRA 204   Improvisational Acting for the Theatre   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; DRA 152 minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

An interactive acting course introducing the art of performing without a script. Various forms of impromptu exercises and traditional acting games are explored to enhance skills in spontaneity, comic timing, concentration, verbal and non-verbal expression, characterization and group cooperation. Students will practice developing improvisational sketches and prepare to perform before an audience.

DRA 208   Acting for Theatre II   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; DRA 152 minimum grade "C-"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course is a continuation of the introduction to acting skills and techniques, exploring a diversity of approaches through improvisation and the presentation of dramatic scripts. Voice projection, staging, character development and emotional expression are explored in theatre games, monologues and scenes. The course will appeal to anyone interested in developing acting, presentation and/or communication skills; therefore, this course may be completed for credit up to a maximum of one time.

DRA 209   Acting for Musical Theatre   **2 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; DRA 152, MUS 204, and MUS 209, minimum grade "C-", may
enroll concurrently in MUS 209
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

This is a fundamentals in acting for musical theatre course. It covers analysis and application of the performance skills needed by the
actor/singer in a musical theatre performance. Through song and scene study, students learn basic acting techniques, including
expression of character through vocal and physical performance, staging, character development and emotional expression. The
emphasis is on performance, not vocal techniques. This course will appeal to anyone interested in developing their vocal performance
and acting skills specifically for musical theatre performance. Students should take this course and MUS 209 in the same semester.

Economics   ECO

ECO 110   Introduction to Economics   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course is a basic one-semester introduction to economics. The course introduces scarcity and rational choice, markets, "supply and
demand," the business firm costs, and competition. Macroeconomic topics include GDP, unemployment, and inflation, as well as money,
banking, and government stabilization policy. International trade issues are also considered.

ECO 211   Principles of Economics I   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 4 or MTH 125 minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This is the first half of the principles of economics sequence. It emphasizes measurement and determination of inflation, unemployment,
output, growth, and national income. The role and creation of money are discussed. Fiscal and monetary policy are considered. Supply
and demand analysis is developed as a foundation.

ECO 222   Principles of Economics II   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; ECO 211 minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This is the second half of Principles of Economics. Emphasis is on microeconomic principles of demand, supply and problems relating to
prices and resource allocation.

ECO 280   International Trade and Globalization   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 4; ECO 211 minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course explores trade between countries. It explains why international trade takes place, and examines the costs and benefits
associated with increasing globalization. Protectionism, immigration reform, oil prices, and NAFTA are discussed, along with the trade's
effects on living standards and the environment. Finally factors that affect growth in developing nations are examined, along with the
roles that the IMF, World Bank, and WTO play. The title of this course was previously International Economics.

Electrical Worker Apprentice   EWA

EWA 100   Introduction to Electrical Apprenticeship   **2 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

This course provides an overview of the electrical apprenticeship program and the responsibilities of an electrician. History, safety, OSHA regulations, and job site conditions are explored. Organizing, motivation and leadership techniques, and labor laws are also covered. Limited to IBEW 252 Apprentices.

EWA 110   Job Information   **3 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

Students study commonly used tools and materials needed for installing complete electrical systems. Shock hazards are discussed and how to use test instruments to check a circuit to verify if it is energized. How to measure voltages and currents on energized circuits, rigging and lifting of loads, and wire insulation properties are also covered. Limited to IBEW 252 Apprentices.

EWA 120   Blueprint Reading   **1 credit**
Level I Prerequisites: Academic Reading and Writing Levels of 6
15 lecture, 0 lab, 0 clinical, 0 other, 15 total contact hours

The course teaches students how to identify line types, use of drawing tools, and techniques used in creating blueprints. Students also study drafting scales, electrical symbols, mechanical symbols, and job specifications to prepare them for transferring written information into the physical installation of complete electrical systems. Limited to IBEW 252 Apprentices.

EWA 130   DC Theory   **3 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

Students study the basic structure of the atom and how current flow occurs in conductor materials. Circuit analysis techniques are applied to series, parallel, and combination circuits. Also covered is an introduction to generation of electricity using the principles of magnetism and electromagnetism. Limited to IBEW 252 Apprentices.

EWA 140   Codeology   **2 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

This course introduces electrical apprentices to the language and format of the National Electrical Code. An understanding of the NEC is fundamental to making safe and proper electrical system installations and this course teaches valuable skills for finding, studying, and interpreting code rules. Limited to IBEW 252 Apprentices.

EWA 150   Code Practices   5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
75 lecture, 0 lab, 0 clinical, 0 other, 75 total contact hours

A comprehensive article-by-article study of the National Electrical Code is presented in this course. The apprentice will discuss and analyze in detail the rules in each article of the NEC as they apply to the installation of each part of a complete electrical system. A thorough understanding of the NEC is requisite for successfully passing the mandatory State of Michigan licensing exam. Limited to IBEW 252 Apprentices.

EWA 160   AC Theory   4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This course studies alternating current systems and circuits. The effects of inductance and capacitance in alternating current systems are calculated using vector analysis techniques so that the apprentice can understand, design, and troubleshoot the alternating current systems that he will install and maintain. Resonance and power factor correction as power quality issues are also discussed. Limited to IBEW 252 Apprentices.

EWA 170   Semiconductors   2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

Students are introduced to the basic theory of operation of semiconductor devices. The basics manufacture and construction of P-type and N-type semiconductor materials and the theory of the PN junction are discussed and then expanded upon with the introduction multilayer devices. Limited to IBEW 252 Apprentices.

EWA 180   Grounding   2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

This course presents an in-depth study of the requirements of Article 250 of the National Electrical Code as it relates to grounding and bonding of systems and equipment. The student will learn the definitions for each part of the grounding installation and will use code tables to determine the correct sizing of the conductors to be installed. Equipment, materials, and techniques for proper installations will also be covered. Limited to IBEW 252 Apprentices.

EWA 190   Transformers and Electrical Safety   2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

The student will learn about OSHA requirements on construction work sites and the proper selection of the proper personal protective equipment and clothing. Electrical safety culture will be discussed and related to transformers which are the most common source of electrical energy in any building. Arc fault current calculations will be presented as part of NFPA 70E requirements for determining safe approach distances for energized equipment. Limited to IBEW 252 Apprentices.

EWA 200   Motors and Controls   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

Students will learn to identify various motor types by their construction and component parts and will learn the operating characteristics of common types of motors that are currently in use in most types of buildings. Reading and understanding nameplate data is presented as a fundamental need for the installation and maintenance of motors. Students will learn to develop control circuits using ladder diagrams to construct complex controls incorporating time delay, interlocking, reversing, plugging, jogging and other fundamental control circuits. Limited to IBEW 252 Apprentices.

EWA 210   Digital Electronics and PLC's   **2 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

This course provides knowledge of digital controls utilizing AND, OR, NAND, XOR, and XNOR logic. Students also study applications of these digital circuits in programmable logic controller installations and applications. Relay ladder logic programming language is studied to provide the student the fundamentals for entering a control program into a PLC. Limited to IBEW 252 Apprentices.

EWA 220   Instrumentation   **1 credit**

Level I Prerequisites: Academic Reading and Writing Levels of 6
15 lecture, 0 lab, 0 clinical, 0 other, 15 total contact hours

Students learn the fundamentals of process control systems. Topics include instrument symbols, test procedures, instrument calibration, installation, and documentation. Students learn measure pressure, temperature, flow, and levels as well as how to calculate expected readings using range and span information. Limited to IBEW 252 Apprentices.

EWA 230   Fire Alarms, Telephone and Security Alarms   **2 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

This course teaches the fundamentals of fire alarm, telephone, and security alarm systems. Topics include: installation, inspection, testing, and maintenance. Also covered are network cabling, pathways, system performance, and administration. Limited to IBEW 252 Apprentices.

EWA 240   Distributed Power Generation and Power Quality   **2 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

Students will learn basics of UPS systems, solar photovoltaic technology, and fuel cell technology as it would apply to the design, installation, inspection, and maintenance of these systems. Also studied are power quality problems that affect all buildings' distribution systems. Topics include: types of PQ problems, causes of PQ problems, locating the problems, PQ test equipment, and solving PQ problems. Limited to IBEW 252 Apprentices.

EWA 250   Technical Mathematics   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

Students will learn basic principles of applied math using Ohm's Law. Students learn to solve circuitry problems, wire resistance, voltage drops, AC circuit parameters, power factor, and phase angle. Limited to IBEW 252 Apprentices.

EWA 260   Applied Science   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course prepares apprentices in the electrical trades to accurately apply principles of science to their work. Topics include: the structure of matter, the physical characteristics of copper and aluminum as conductor materials, the atomic structure of conductors versus insulators (dielectrics), temperature-pressure enthalpy diagrams for heating and cooling cycles, and light propagation in fiber optic media. Limited to IBEW 252 Apprentices.

Electricity/Electronics   ELE

ELE 040   Residential Wiring   2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
0 lecture, 45 lab, 0 clinical, 0 other, 45 total contact hours

This course is a practical hands-on course that has been designed to help students better understand wiring techniques and safety considerations for dealing with a residential wiring system. A great deal of "hands-on" time is offered and is devoted to working with the wiring materials and constructing circuits of the type found in the home. Typical of the kinds of circuits that are discussed and wired by the student are: duplex outlet circuits, dimmer circuits, three and four-way switch circuits, CGI circuits, lawn and garden lighting circuits, electrical dryer and electric stove circuits. Grading is by the satisfactory/unsatisfactory system.

ELE 041   Residential Wiring II   2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
15 lecture, 30 lab, 0 clinical, 0 other, 45 total contact hours

This course is a continuation of ELE 040. It is a hands-on projects course designed to allow students to better understand more advanced wiring techniques when working on residential wiring. Part of the course is discussing individual projects and drawing the necessary diagrams. Most of the course is devoted to working with the electrical materials, and constructing the type of circuits found in the home. The new circuits wired include: main panel grounding, sub panels, heaters, and security.

ELE 106   Renewable Energy Technology   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 3 or MTH 151 minimum grade "C-"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course provides a comprehensive introduction to the principles and practical applications of solar, wind, geothermal, hydroelectric, ocean and biomass renewable energy technologies. Motivations for developing renewable energy will be examined and students will evaluate their personal energy footprint and create a plan to reduce it. Demonstrations, field trips and labs will provide direct contact with the technology. Students will work in teams on a design project to explore one technology in depth.

ELE 111   Electrical Fundamentals   4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 3 or MTH 151 minimum grade "C"
60 lecture, 30 lab, 0 clinical, 0 other, 90 total contact hours

This is an introductory course in AC and DC concepts and circuits. The course is designed to foster an intuitive understanding of electrical concepts appropriate for occupations involved with the installation, maintenance, and troubleshooting of electrical circuits and devices. Lab exercises deal with the use of test equipment for the purpose of verifying circuit operation and troubleshooting circuit faults. Students must have good numerical and algebraic skills to be successful in this course.

ELE 134   Motors and Controls   4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
Level II Prerequisites: ELE 111 minimum grade "C-" or equivalent
60 lecture, 30 lab, 0 clinical, 0 other, 90 total contact hours

This course introduces students to the theory and application of AC and DC electrical machines and their controls. Topics include DC generators, DC motors and controls, 3 phase power, 3 phase transformers, alternators, 3 phase and single phase AC motors and controls, electronic motor drives, synchronous motors, servo motors and stepper motors. In weekly lab assignments, students will read and interpret schematic diagrams, connect motors and controls, test and troubleshoot motors and controls.

ELE 174   ELE Co-op Education I   1-3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; ELE 111 or CST 150; consent required
0 lecture, 0 lab, 0 clinical, 120 other, 120 total contact hours

In this course, the student gains skills from a new experience in an approved, compensated, electronics related position. Together with the instructor and employer, the student sets up work assignments and learning objectives to connect classroom learning with career-related work experience. This is the first of two possible co-op experiences.

ELE 204   National Electrical Code   4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
Level II Prerequisites: ELE 111 or equivalent
75 lecture, 0 lab, 0 clinical, 0 other, 75 total contact hours

This course covers the use of the National Electrical Code as a tool to plan the safe installation of electrical equipment in residential, commercial, and industrial locations. Students determine required number and sizes of branch circuits, conductors, fuses, raceways and boxes. Other topics include grounding, motor circuits and controls, local codes, and code changes. Recommended for students interested in industrial control technology or in becoming licensed journeypersons or master electricians.

ELE 211   Basic Electronics   4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
Level II Prerequisites: ELE 111 or equivalent
45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

Basic Electronics is a beginning lecture and laboratory course covering solid state devices. It includes the theory and application of diodes, and both bipolar and field effect transistors. These devices are tested and then circuits using them are constructed and tested in the laboratory using common laboratory equipment. Prerequisites will be checked by the instructor on the first day of class.

ELE 224 Introduction to PLCs
4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
Level II Prerequisites: ELE 111 minimum grade "C-" or equivalent
60 lecture, 30 lab, 0 clinical, 0 other, 90 total contact hours

This course is an introduction to programmable logic controllers (PLCS) which covers PLC hardware, relay-type, timer, counter, data manipulation, math and program control instructions, with an emphasis on troubleshooting. Weekly lab assignments use Allen Bradley SLC-500 and PLC-5 controllers and RSLogix software. This course is offered for students, electrician apprentices, electricians, technicians, and engineers.

ELE 254 PLC Applications
4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 3
Level II Prerequisites: ELE 224 minimum grade "C-"
60 lecture, 30 lab, 0 clinical, 0 other, 90 total contact hours

This is an advanced, hands-on course in PLC system concepts and troubleshooting. Topics include analog I/O, data manipulation, block transfer, on/off and PID closed loop control, data communications (DH+ and remote I/O), operator interface terminals (PanelView), and sequential systems. SLC-500 and PLC-5 processors, and RSLogix500, RSLogix5, and PanelBuilder software are used in lab exercises. This course is intended for students in industrial electronics and automation technology, electrician (and other) apprentices, and industrial technicians. Also for engineers desiring hands-on PLC experience.

ELE 274 ELE Co-op Education II
1-3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; ELE 174; consent required
0 lecture, 0 lab, 0 clinical, 120 other, 120 total contact hours

In this course, students gain skills from a new experience in an approved, compensated, industry-related position. Together with the instructor and employer, students set up work assignments and learning objectives to connect classroom learning with career-related work experience. This is the second of two co-op courses.

ELE 284 Control Logic Programming
4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
Level II Prerequisites: ELE 254 minimum grade "C-" or equivalent
60 lecture, 30 lab, 0 clinical, 0 other, 90 total contact hours

This is a course in industrial control logic. Students will learn combinational and sequential relay logic analysis and recognize some logic design and simplification techniques. Lecture and laboratory topics will include control systems, number systems and codes, Boolean logic, ladder logic diagrams, IEC symbols, and the programming and use of programmable logic controllers (PLCs) to implement combinational and sequential control applications.

English   ENG

ENG 000 Writing Center
0 credit

0 lecture, 15 lab, 0 clinical, 0 other, 15 total contact hours

ENG 000 is a required co-requisite for all students enrolled in English 050, 051, 090, 091, 100 and 111. Students enrolled in ENG 000 complete writing assignments - at the sentence, paragraph, or essay level appropriate to their writing course - that are evaluated in the Writing Center by Writing Center staff.

ENG 010   Writing Practicum   1 credit

Level I Prerequisites: Academic Reading and Writing Levels of 6; consent required
0 lecture, 15 lab, 0 clinical, 0 other, 15 total contact hours

This course provides individualized instruction on composition components, including grammar, punctuation, research, and documentation. Enrollment is restricted to Writing Center tutors only. Satisfactory/unsatisfactory grading is used.

ENG 023   High Beginning ESL Reading and Writing   4 credits

Level I Prerequisites: ESL Writing Level E1; ESL Reading Level E1; ESL Listening Level E1
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This course is designed to help students move beyond minimal survival English in the areas of reading and writing. The reading portion focuses on building vocabulary as well as reading skills. The writing portion focuses on the production of sentences on basic topics with much guidance. Satisfactory/unsatisfactory grading is used. The title of this course was previously High Beginning ESL Reading and Listening.

ENG 024   High Beginning ESL Grammar and Communication   4 credits

Level I Prerequisites: ESL Writing Level E1; ESL Reading Level E1; ESL Listening Level E1
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This class is designed for students who have had some exposure to and/or instruction in English. This course goes beyond minimal survival English toward communication of daily living. Grammar and communicative competence are emphasized. This class can be taken concurrently with ENG 023. Satisfactory/unsatisfactory grading is used.

ENG 025   High Beginning ESL Listening and Speaking   4 credits

Level I Prerequisites: ESL Reading Level E1; ESL Writing Level E1; ESL Listening Level E1
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This course is designed to help students move beyond minimal survival English toward communication for daily living. The speaking portion of this class will focus on the English sound system, basic pronunciation, and practical conversation skills. The listening portion focuses on the comprehension of spoken English. Satisfactory/Unsatisfactory grading is used.

ENG 027   Low Intermediate ESL Reading and Writing I   4 credits

Level I Prerequisites: ESL Writing Level E3; ESL Reading Level E2; ESL Listening Level E3
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This course is designed to lay the foundations for reading and writing improvement needed by ESL students. Emphasis is placed on the development of skills, reading for pleasure, and writing about personal topics. Vocabulary development, active reading strategies, silent reading and comprehension, and English sentence structure are covered. Students must satisfactorily complete their work before advancing to a higher level reading or writing course. Satisfactory/unsatisfactory grading is used. The title of this course was previously Low Intermediate ESL Reading I.

ENG 028   Low Intermediate ESL Reading and Writing II   **4 credits**

Level I Prerequisites: ENG 027 with grade "S"
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This course is designed to lay the foundations for reading and writing improvement needed by ESL students. Emphasis is placed on the development of skills, reading for pleasure, and writing about personal topics. Vocabulary development, active reading strategies, silent reading and comprehension, and English sentence structure are covered. Students must satisfactorily complete their work before advancing to a higher level reading or writing course. Satisfactory/unsatisfactory grading is used. The title of this course was previously Low Intermediate ESL Reading II.

ENG 030   Intermediate ESL Grammar I   **4 credits**

Level I Prerequisites: ESL Writing Level E3; ESL Reading Level E2; ESL Listening Level E3
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This intermediate level class expands students' knowledge of English grammar and vocabulary and their ability to understand and use spoken and written English. Special attention is given to the appropriate use of the forms studied. Satisfactory/unsatisfactory grading is used.

ENG 032   Intermediate ESL Grammar II   **4 credits**

Level I Prerequisites: ENG 030 with grade "S"
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This course meets with ENG 030 but students are required to demonstrate greater mastery of the material. Successful completion of ENG 032 is required for entrance into ENG 060. Satisfactory/unsatisfactory grading is used.

ENG 033   Intermediate ESL Reading I   **4 credits**

Level I Prerequisites: ESL Writing Level E3; ESL Reading Level E3; ESL Listening Level E3
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This course is designed to further develop independent reading comprehension skills for ESL students. Emphasis is placed on vocabulary development, active reading strategies, variable reading rates, independent silent reading and comprehension. Students must satisfactorily complete their work before advancing to a higher level reading course. Satisfactory/unsatisfactory grading is used.

ENG 034   Intermediate ESL Reading II   **4 credits**

Level I Prerequisites: ENG 033 with grade "S"
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

The course is a continuation of ENG 033. It is designed to further develop independent reading comprehension skills for ESL students. Emphasis is placed on vocabulary development, active reading strategies, variable reading rates, independent silent reading and comprehension. Students must satisfactorily complete their work before advancing to a higher level reading course. Satisfactory/unsatisfactory grading is used.

ENG 035   English Pronunciation and Conversation (ESL)   3 credits

Level I Prerequisites: ESL Writing Level E4; ESL Reading Level E3; ESL Listening Level E3; Students with ESL Writing Level E3 may enroll in ENG 030 or ENG 032 concurrently; Students with ESL Reading Level E2 may enroll in ENG 027 or ENG 028 concurrently

45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course is designed to help students improve their aural and oral communication skills. The three components of the course are: systematic introduction to and practice with the sound system of American English, especially suprasegmentals; extensive listening practice in the library and in class; and introduction to and practice with appropriate conversational skills, such as offering, accepting, and refusing invitations, and asking for and giving opinions.

ENG 037   Intermediate ESL Writing I   4 credits

Level I Prerequisites: ESL Writing Level E4; ESL Reading Level E5; ESL Listening Level E3; Students with ESL Writing Level E3 may enroll in ENG 030 or ENG 032 concurrently; Students with ESL Reading Level E3 may enroll in ENG 033 or ENG 034 concurrently

60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This course is designed to help students internalize both the grammar and vocabulary that they have been studying by using it to produce well-formed sentences and paragraphs. Writing as communication is emphasized. Satisfactory/unsatisfactory grading is used.

ENG 038   Intermediate ESL Writing II   4 credits

Level I Prerequisites: ENG 037 with grade "S"
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This class is a continuation of ENG 037. This class meets along with 037 and focuses on strengthening the students' ability to express themselves in English. Satisfactory/unsatisfactory grading is used.

ENG 050   Basic Writing I   4 credits

Level I Prerequisites: Academic Reading Levels 3, 4 or 5; Academic Writing Level 2 only

Corequisites: ENG 000
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This class is not intended for students who speak English as their second language. Inexperienced writers will gain confidence writing formal English sentences and paragraphs in and out of class. Students will also utilize the Writing Center and complete required assignments as part of the class. It is strongly recommended that students enroll in a reading course before or at the same time as this course.
Satisfactory/unsatisfactory grading is used. Satisfactory completion of ENG 050 is required to advance to ENG 051.

ENG 051   Basic Writing II   4 credits

Level I Prerequisites: ENG 050 with grade "S"
Corequisites: ENG 000
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This class is not intended for students who speak English as their second language. This is a continuation of English 050, and inexperienced writers will gain confidence writing formal English sentences and paragraphs in and out of class. Students will complete more advanced individual and Writing Center assignments. Satisfactory/unsatisfactory grading is used. Satisfactory completion of ENG 051 is required to advance to ENG 090 and will raise your Academic Writing level to 3.

ENG 060   Advanced ESL Grammar I   4 credits

Level I Prerequisites: ENG 037 or ENG 038 may enroll concurrently; ESL Writing Level E4; ESL Reading Level E5; ESL Listening Level E4; Students with ESL Reading Level E3 may enroll in ENG 033 or ENG 034 concurrently; Students with ESL Listening Level E3 may enroll in ENG 035 concurrently

60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

Students study sophisticated forms of English grammar, including subject/verb inversion, reduced clauses, and complex verb phrases. Special attention is given to the appropriate use of the forms studied. Satisfactory/unsatisfactory grading is used.

ENG 061   Advanced ESL Grammar II   4 credits

Level I Prerequisites: ENG 060 with grade "S"
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This course meets with ENG 060, but students are required to demonstrate greater mastery of the material. Successful completion of ENG 061 is required for progressing into classes with native speakers. Satisfactory/unsatisfactory grading is used.

ENG 065   Advanced ESL Speaking and Listening   3 credits

Level I Prerequisites: ESL Writing Level E4; ESL Reading Level E5; ESL Listening Level E4
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This class is designed to teach international students the listening, note taking and speaking skills needed for success in American college classrooms. Satisfactory/unsatisfactory grading is used.

ENG 090   Writing Fundamentals I   4 credits

Level I Prerequisites: Academic Reading Level 3; Academic Writing Level 3 only
Corequisites: ENG 000
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This course focuses on strengthening the writing skills needed in preparation for college-level coursework. The emphasis is on developing and organizing ideas in paragraphs and essays. Satisfactory/unsatisfactory grading is used. Satisfactory completion of ENG 090 is required to advance to ENG 091.

ENG 091   Writing Fundamentals II   4 credits

Level I Prerequisites: ENG 090 with grade "S"
Corequisites: ENG 000
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This course is a continuation of ENG 090. This course focuses on strengthening the writing skills needed in preparation for college-level coursework. The emphasis is on developing and organizing ideas in paragraphs and essays. In order to pass with a grade of "C" or better and be eligible to take 100 level English courses, students must demonstrate at least "C" level competency on in-class writing by the end of the semester. Successful completion of this course with a minimum grade of "C" will raise your Academic Writing level to 6.

ENG 100   Introduction to Technical and Workplace Writing   **4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
Corequisites: ENG 000
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students learn how to write effective technical and workplace documents such as emails, letters, memos, invoices, work orders, labor reports, resumes, and short reports. Students write documents in response to situations that they will likely encounter on the job. Emphasis will be placed on planning and writing clear, concise, and audience-focused documents. During the first week of class, students must demonstrate a writing proficiency at the college level. The title of this course was previously Written Communication.

ENG 107   Technical Writing I   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students learn the technical writing process and apply it to writing tasks similar to those they will encounter on the job. Students develop, organize, and write documents such as memos, technical definitions and descriptions, instructions, reports, and presentations. At the end of the semester, students prepare an electronic portfolio of their technical writing assignments. Note: During the first week of class, students must demonstrate a writing proficiency at the college level.

ENG 111   Composition I   **4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
Corequisites: ENG 000
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This course teaches students to write effective academic essays for various audiences. Reading materials serve as a basis for essays and classroom discussions. Students write both in-class and out-of-class essays. During the first week of class, students must demonstrate their writing proficiency. In order to pass with a "C" or better, students must demonstrate at least "C" level competency on in-class writing by the end of the semester.

ENG 115   Writing for Visual Media   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

Writing for Visual Media gives students experience writing scripts for film, TV, and Web-based video in several genres. It differs from COM 155, which focuses on radio and other broadcast media; and from VID 210, which focuses on narrative scripts intended for production in other advanced VID courses. Public service announcements, commercials, documentaries and feature film scripts are examined.

ENG 140   Horror and Science Fiction   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course is a study of science fiction and horror in literature with emphasis on literary, historical, psychological and cultural relevance. Short stories, novels, poems, films, and/or nonfiction related to both genres are analyzed and discussed. Students will apply critical-thinking skills to assess literary works. Specially designated sections may focus on horror, science fiction, subgenres or major authors.

ENG 160   Introduction to Literature: Poetry and Drama   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course is designed to give an understanding of literature through writing assignments, close reading and discussion of selected works of poetry and drama. Students will apply critical thinking skills to assess literary works.

ENG 170   Introduction to Literature: Short Story and Novel   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

Students explore short stories and the novel as they provide blueprints for living, self-discovery, and recreation. Students will be introduced to the elements of fiction, various literary genres and their cultural, historical contexts. They will be given a literary vocabulary to use in assessing the value of literary works. Students will be expected to analyze fiction critically in class discussions and through formal and informal writings. Specially designated sections of the course may be devoted to special topics such as mystery, war, westerns, women's issues, popular fiction, etc.

ENG 181   African-American Literature   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course provides a survey of the African-American experience in the world of literature. It is an introduction to African-American thought through readings in poetry, fiction, drama, autobiography and the essay. Students will apply critical thinking skills to assess literary works.

ENG 185   English Grammar and Usage   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students formalize their knowledge of the structure of English. They learn the internal grammar of English and the difference between issues of grammar and usage. Students examine some of the complex problems related to English grammar and usage. This course is a structural analysis of English and is designed for college level students.

ENG 199   Technical Writing Internship   1-3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to Technical Writing program and ENG 208 minimum
                                grade "C"
0 lecture, 0 lab, 0 clinical, 45 other, 45 total contact hours

In this course, students gain skills in technical communication through work assignments provided by a host company and supervised by both the company supervisor and the instructor. At the beginning of the internship, specific learning objectives related to the assignments are developed, hours of work are established, and instructor conference times are set. At the end of the internship, the supervisor evaluates the student performance, and the student writes a self-evaluative report based on the experience.

ENG 200   Shakespeare   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course covers introductory reading, discussion and analysis of the varieties of Shakespeare's works. Wherever possible, the opportunity to view performances, either live or on video, is made available. Students will apply critical thinking skills to assess literary works.

ENG 208   Technical Writing II   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; ENG 107 minimum grade "C", may enroll concurrently
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students learn how to manage, design, write, and edit end-user documentation. Students prepare detailed project plans, project schedules, and design documents that guide them through the writing and editing phases of their projects. The final document (25-page minimum) as well as all planning and design specifications are presented in a portfolio at the end of the semester. (Note: Students use advanced features in MS Word including styles, templates, tables of contents, and indexes to create their documents.)

ENG 209   Technical Writing III   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; ENG 208 minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this hands-on course, students use FrameMaker (both Unstructured and Structured) to design and manage content; build on the project management skills learned in ENG 208 to develop larger, more complex plans and schedules that involve multiple team members; develop style guides and FrameMaker templates to use for their team projects; draft, revise, and finalize training documentation; and conduct in-class training sessions using their documentation.

ENG 211   American Literature I - Before 1900   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

The course provides a survey of the literature of North America (continental U.S.) from the 17th century to 1900. Students will apply critical thinking skills to assess literary works.

ENG 212   British Literature - Before 1800   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

The course analyzes British literature from its origins until 1800. Readings stress the major works and authors of the period (e.g., "Beowulf", Chaucer, Shakespeare, Milton, Pope, Swift). Students will apply critical thinking skills to assess literary works.

ENG 213   World Literature I   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course students will analyze world literature through literary masterpieces written from the time of ancient Greece through the Renaissance. Students will apply critical thinking skills to assess literary works.

ENG 214   Literature of the Non-Western World   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course is a survey of major world literature excluding European and American literature. Typically, the course covers selections from Africa, Asia, the Middle East and the sub-continent of India, and includes a variety of traditional, modern and contemporary works of literature to introduce and explore the world's literary cultures. Students will apply critical thinking skills to assess literary works.

ENG 218   Technical Writing IV   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; ENG 208 minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this hands-on course, students learn how to manage online help projects; design, write, and test online help systems using Adobe RoboHelp; and incorporate software demonstrations using Adobe Captivate. Students explore the best delivery option(s) for their target audience, and produce multiple outputs (such as HTML Help, Web Help, Flash Help and Adobe Air Help) from a single source.

ENG 222   American Literature II - 1900 to the Present   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course provides a survey of the literature of the United States from 1900 to the present, including important pieces of modern and contemporary American literature. Students will apply critical thinking skills to assess literary works.

ENG 223   British Literature - After 1800   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course analyzes British literature from 1800 to present. Readings stress the major works and authors of the period (e.g. Blake, Keats, Browning, Hopkins, Hardy, Conrad, Yeats, Joyce, Eliot). Students will apply critical thinking skills to assess literary works.

ENG 224   World Literature II **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course is a continuation of ENG 213. It analyzes some of the great literary works of the Western tradition since the Renaissance and demonstrates how these works have contributed to present cultural heritage. Students will apply critical thinking skills to assess literary works.

ENG 226   Composition II **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; ENG 111 minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

Composition II is the second semester of the two-course freshman writing sequence. The course is a continuation of "ENG 111: Composition I," and further develops critical reading and logical thinking skills. Students will write argumentative essays using a variety of formats. Research writing and documentation is emphasized. This course was previously in ENG 122.

ENG 240   Children's Literature **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course is a survey of prose, poetry and illustrated books suitable for the preschool, elementary and early adolescent child. This course is required of students entering elementary education; also, the course is beneficial for library studies or work, teacher's aide program, nursery and day care work and as general education for parents. Students will apply critical reading, thinking and writing skills to assess literary works.

ENG 242   Multicultural Literature for Youth **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course is a survey of prose, poetry and illustrated books exploring the experience of minority youth in American society suitable for the preschool through early adolescent child. Students will apply critical reading, thinking and writing skills to assess literary works. This course is strongly recommended for students entering elementary education; also, the course is beneficial for library studies or work, teacher's aide programs, nursery and day care work and as general education for parents.

ENG 245   Job Search Success Seminar **2 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

In this course, students explore how to conduct a successful job search. Topics covered include developing a systematic job search strategy, preparing related documents (such as a cover letter and resume), and developing effective interviewing skills. Students also learn the benefits of preparing a portfolio to share with prospective employers. The title of this course was previously Career Practices Seminar.

ENG 260   Journal Workshop I   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This workshop is for emotionally mature, self-directed people committed to growth and discipline in their writing and in their lives. It offers writing techniques as a means to self-discovery and expression. There is a choice of many ways to use writing to tell one's stories, address issues, cultivate creativity and celebrate life. Journals remain confidential. Some self-selected journal entries are shaped into polished, creative pieces meant for sharing with others.

ENG 261   Journal Workshop II   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This workshop is a continuation of ENG 260, for students who have already completed ENG 260, and who wish to continue to develop their skills and produce additional written work. Students work on individual projects.

ENG 270   Creative Writing I   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

Students explore how writers discover ideas by writing and revising original poetry, fiction, drama or non-fiction. Students use the basic elements of literary genres and a literary vocabulary to appreciate and evaluate creative writing. Students become critical readers of creative expression through writing workshops, sharing their work and reviewing others' work in a writing community that provides a supportive audience. Some course sections may focus on a particular genre such as poetry, fiction, drama or non-fiction.

ENG 271   Creative Writing II   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; ENG 270 minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

Students apply their knowledge of how writers discover ideas through writing and revising original poetry, fiction, drama or non-fiction. They become more adept at using a literary vocabulary both in class discussions and in their writing. Students will recognize the elements of good writing, such as concrete and sensory details, and utilize these elements in their own writing. They will be able to provide an in-depth analysis, such as explanations and interpretations, of writing samples. Students may choose to focus on a specific genre or continue their exploration of all genres.

Environmental Science   ENV

ENV 101   Environmental Science I   4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 2
45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

This introductory science course will cover the physical processes that affect the environment, the impact of people on the environment and the physical resources in our environment. It will also explore the causes, consequences and possible solutions to both local and global environmental issues. Emphasis will be placed on a holistic approach to environmental science, using laboratory exercises, class discussions and projects to reinforce scientific principles.

ENV 105   Introduction to Environment and Society   3 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 2
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course provides an in-depth look at the relationships between individuals, societies and the environment from the perspectives of science, humanities and social science disciplines. Local to global environmental issues and topics will be presented and analyzed through a combination of lecture, readings, classroom discussions and activities.

ENV 201   Environmental Science II   4 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 4; ENV 101 minimum grade "C"
45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

This course offers an in-depth, interdisciplinary approach to the understanding of the environment and environmental issues. These problems and their solutions will be studied from a scientific, as well as a social scientific, perspective. The course features a capstone project where students will work on environmental issues.

Fluid Power   FLP

FLP 101   Fluid Power Fundamentals - I   2 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6
30 lecture, 15 lab, 0 clinical, 0 other, 45 total contact hours

This is an introductory class covering the fundamental principles of fluid power, both hydraulics and pneumatics. Subject matter includes application of Pascal's Law, prime mover requirements, principle of operation of fluid power fixed displacement pumps and compressors, control valves and actuators. Component failure modes and troubleshooting concepts are also covered. This course contains material previously taught in FLP 111. FLP 101 is generally offered in the first 7 1/2 week session.

FLP 110   Fluid Power Fundamentals - II   2 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6; FLP 101 minimum grade "C", may enroll concurrently
30 lecture, 15 lab, 0 clinical, 0 other, 45 total contact hours

This class builds on the foundation set in FLP 101 with coverage of variable displacement pumps, proper system contamination control and filtration, hydraulic fluid requirements and compatibility, solenoid valves, load control valves, speed controls, fluid power motors and pressure intensifiers. Hands-on exercises include building of fluid power circuits and disassembly/inspection of hydraulic components. This course contains material previously taught in FLP 111. FLP 110 is generally offered in the second 7 1/2 week session.

FLP 174   FLP Co-op Education I   1-3 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6; consent required
0 lecture, 0 lab, 0 clinical, 120 other, 120 total contact hours

In this course, students gain skills from a new experience in an approved, compensated, industry-related position. Together with the instructor and employer, students set up work assignments and learning objectives to connect classroom learning with career-related work experience.

FLP 214   Hydraulic Circuits and Controls   4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; FLP 101 and FLP 110, minimum grade "C-"
30 lecture, 60 lab, 0 clinical, 0 other, 90 total contact hours

This course further develops the concepts of directional, pressure and flow controls covered in FLP 101 and FLP 110. Troubleshooting and reading of hydraulic blueprints is emphasized. Circuits will include conventional valving, modular sandwich, screw in and slip in cartridge valves. An introduction to proportional valves, servo valves and electrical ladder control diagrams is included. Lab exercises play an important role in this class. This course contains material previously taught in FLP 213.

FLP 225   Fluid Power Motion Control   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; FLP 214
30 lecture, 45 lab, 0 clinical, 0 other, 75 total contact hours

This course reviews basic electrical principles and covers amplifier theory as applied to open loop and closed loop control. Proportional directional valves, flow control valves and pressure control valves are discussed along with hydraulic servo valves. Proper setup alignment of the drive amplifiers and troubleshooting of servo and proportional control systems are covered in class and laboratory sessions. Closed loop (PID) control theory and feedback transducers are also discussed.

FLP 226   Pneumatics   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 3; FLP 101 and FLP 110, minimum grade "C-"
30 lecture, 30 lab, 0 clinical, 0 other, 60 total contact hours

This course covers operation and practical use of compressors, air distribution systems, actuators, directional valves and other controls used in automation. The second half of the course concentrates on the design of pneumatic control and power circuits using ANSI and ISO symbols and also the Moving Part Logic technique (pneumatic ladder logic).

FLP 274   FLP Co-op Education II   1-3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; FLP 174; consent required
0 lecture, 0 lab, 0 clinical, 120 other, 120 total contact hours

In this course, students gain skills from a new experience in an approved, compensated, industry-related position. Together with the instructor and employer, students set up work assignments and learning objectives to connect classroom learning with career-related work experience. This is the second of two co-op courses.

French   FRN

FRN 101   Beginning Conversational French I   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students acquire practical early-elementary conversational skills. They develop the ability to understand and speak everyday conversational French within the context of French-speaking cultures and through introduction of vocabulary, basic grammatical structures and idioms. Listening activities and some reading/writing activities will be included. Students are expected to spend considerable time outside of class practicing with materials provided. This course contains material previously taught in FRN 109.

FRN 109   Beginning Conversational French   2 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

Conversational in approach, this course assumes no prior knowledge of the language. Students will practice the fundamentals of spoken and written French and enhance their appreciation of French Civilization and the culture(s) of the French-speaking countries. Note: This course does not fulfill four-year college language requirements. This course was previously FRN 120.

FRN 110   Intermediate Conversational French   2 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6; FRN 109 or one semester of college French
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

This course emphasizes the use of spoken French in everyday context. Students work on improving aural/oral skills. By semester's end students should feel comfortable creating with language in the present, past and future tenses. This course does not satisfy four-year college language requirements. This course was previously FRN 121.

FRN 111   First Year French I   5 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6
75 lecture, 0 lab, 0 clinical, 0 other, 75 total contact hours

This is a beginning and transferable course in French which emphasizes communicative approach. Class work and aural/oral practice sessions assist the student in progressing effectively in the four language skills of listening, speaking, reading and writing. Cultural aspects of the French-speaking world are also highlighted.

FRN 122   First Year French II   5 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6; FRN 111
75 lecture, 0 lab, 0 clinical, 0 other, 75 total contact hours

This is a continuation of FRN 111. Continuing classroom work and aural/oral practice sessions help the student to acquire basic conversational tools of the language as well as basic informational aspects of the culture.

Geography   GEO
GEO 101   World Regional Geography   3 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This is an introductory course in World Regional Geography which is divided into two parts. In the first portion of the class, students become familiar with the basic principles and concepts of physical and cultural geography which they will employ during the remainder of the semester. In the second part of the class, students survey the world on a region-by-region basis, identifying the specific geographic characteristics such as climate, terrain, population, industry and manufacturing, trade, transportation, and agriculture, which give the individual regions their unique identity.

Geology   GLG

GLG 100   Introduction to Earth Science   **4 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

This course provides a basic understanding of the major branches of earth science, including geology, hydrology and meteorology. It is designed to develop an awareness and appreciation for these geosystems and their important interrelationships, as well as an understanding of the scientific approach to problem-solving. This course will include an overview of both local and global environmental problems as well as a discussion of possible solutions.

GLG 103   Field Geology   **3 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

Students examine the processes that have formed and are forming the landscape by studying formations at local sites. Emphasis is placed on environmental impact on the landscape and waters of Washtenaw County. Traditional classroom lectures will be supplemented with field experiences to explore topics learned in class.

GLG 104   Weather   **4 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 3
45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

This course is an introductory study of the atmosphere which includes both weather and climate. This course introduces the student to basic concepts involved in the analysis of weather phenomena and atmospheric processes on a global and local scale. Fundamental weather principles will be examined, such as: solar radiation, temperature, moisture, pressure, winds, and weather systems. Current weather data is delivered via the internet, which is coordinated with learning activities. Broad aspects of climates, local microclimatology and climate change will also be integrated.

GLG 110   Geology of the National Parks and Monuments   **2 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

The geological settings of specific national parks and monuments are studied including the principles and processes which shaped them. Slide programs and topographical maps are used to illustrate geological features.

GLG 114   Physical Geology   **4 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

Students examine the physical features and processes that have formed and are forming the landscape of the Earth. Emphasis is placed on learning the local geology of Michigan and the Great Lakes. Topics will include: topographic maps, minerals, rocks, soil erosion and formation, plate tectonics, earthquakes, volcanoes, mountain building, geologic time and dating, running water, lakes, groundwater, oceans and glaciation.

GLG 202   Earth Science for Elementary Teachers   **4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

This course utilizes laboratory activities, lecture and projects to present the content and methodology necessary for success in teaching Earth science in the elementary classroom. Various geology topics will be covered such as the geosphere, hydrosphere, atmosphere, environmental issues and space. Teaching methodology includes developing a portfolio of activity plans, presenting an activity from those plans and creating a bulletin board pertaining to an Earth science concept. This course is intended for early childhood and elementary education students only.

GLG 276   Principles of Geographic Information Systems   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 3; GLG 100 or GLG 114, minimum grade "C"; may enroll concurrently in either course
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course is designed to introduce the student to the basic principles and techniques of map creation and manipulation using Geographic Information Systems (GIS). Students will use ArcGIS to focus on various ways to classify, represent and visualize the Earth's surface. Upon completion of this course, students will have an understanding of basic GIS and develop fundamental skills to integrate data, draw maps, visualize trends and interpret findings.

German   GRM

GRM 101   Beginning Conversational German I   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students acquire elementary conversational skills and develop the ability to understand, speak, react, and reflect using everyday conversational German. Through the introduction of vocabulary, grammatical structures, idioms, and real-life dramatization, the students practice these skills. Listening activities and some reading/writing activities will be included. Students are expected to spend considerable time outside of class practicing with materials provided. This course contains material previously taught in GRM 109.

GRM 102   Beginning Conversational German II   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; GRM 101 or one semester of college German
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students acquire higher-level elementary conversational skills and develop the ability to understand, speak, react, and reflect using everyday conversational German. Through the introduction of vocabulary, grammatical structures, idioms, and real-life dramatization, the students will practice these skills. Students are expected to spend considerable time outside of class practicing with materials provided. This course contains material previously taught in GRM 110.

GRM 111   First Year German I   **5 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
75 lecture, 0 lab, 0 clinical, 0 other, 75 total contact hours

This is a beginning and transferable course in German which emphasizes the aural-oral approach. Classroom work and aural/oral practice sessions assist the student in establishing and perfecting basic conversational tools in the language. Students intending to study German should have a sound, basic background in English grammar and syntax to be able to take and succeed in a foreign language as inflected and analytical as German.

GRM 122   First Year German II   **5 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6; GRM 111
75 lecture, 0 lab, 0 clinical, 0 other, 75 total contact hours

This is a continuation of GRM 111. Continuing classroom work and aural/oral practice sessions emphasize the communicative approach. Class conversations, short readings, and pattern practice also assist students in acquiring facility in the language, as well as informational aspects of the culture. Students who have experience equivalent to GRM 111 may contact the instructor for permission to waive the prerequisite.

Graphic Design Technology   GDT

GDT 100   Typography I   **4 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6; GDT 104 minimum grade "C" or (GDT 106 and GDT 107, minimum grade "C")
45 lecture, 0 lab, 0 clinical, 45 other, 90 total contact hours

This is an introduction to the evolution/principles of typography concentrating on typographic form and classification, type as form/image, display type, text type, typographic relationships, readability/legibility, grid systems, fundamental design principles and page layout. Assignments investigate typography as an element of design whose form and purpose is to achieve successful, informative and expressive visual communication. Students must be proficient with desktop/personal computers.

GDT 101   History of Graphic Design   **3 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course presents the history of Graphic Design from the Victorian Era to the present, focusing primarily on European and American major design movements and pioneering graphic designers/artists. Lectures refer to the social and political climates, the relationship of the applied arts to the fine arts, and technological innovations from the time of Gutenberg's movable type printing press through digital printing and media.

GDT 104   Introduction to Graphic Design   **4 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 45 other, 90 total contact hours

This course is an introduction to graphic design principles, methods and techniques that are used to incorporate type and image in to visual communication. Students complete practical design projects that examine the interaction of medium and message using industry-standard page layout, illustration and image editing software.

GDT 105   Introduction to Mac Graphics   **3 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course is an introduction to the fundamental tools and procedures of desktop publishing using Macintosh computers. Students complete tutorial exercises in a computer lab, using a variety of page layout and graphic applications. This course is recommended for those with little or no computer experience.

GDT 106   Illustrator Graphics   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
30 lecture, 0 lab, 0 clinical, 30 other, 60 total contact hours

This course covers the fundamental tools and techniques for the vector drawing software Adobe Illustrator. Lectures, demonstrations, exercises, and publication projects prepare students for basic software proficiency in the current version of the software. Students enrolling in this course should be proficient in the use of desktop/personal computers. Students enrolling in GDT computer-based courses should be proficient in basic desktop computer operations. This course contains material previously taught in GDT 139.

GDT 107   InDesign   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
30 lecture, 0 lab, 0 clinical, 30 other, 60 total contact hours

This course covers the fundamental tools and techniques for the page layout software, Adobe InDesign. Students will use InDesign to create page layouts for both screen and print media. Students will learn how to apply typographic tools, design to a grid, apply color and generate and apply graphic elements to publications. Students will gain basic software proficiency in the current version of the software. Students enrolling in GDT computer-based courses should be proficient in basic desktop computer operations. This course contains material previously taught in GDT 130.

GDT 108   Photoshop Graphics   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 2
30 lecture, 0 lab, 0 clinical, 30 other, 60 total contact hours

This course covers the primary features and uses of Adobe Photoshop image-editing software. Lectures, demonstrations, exercises and imaging projects introduce students to basic software tools and techniques for image correction, enhancement, compositing, and new image creation for both print and on-screen use. Students enrolling in GDT computer-based courses should be proficient in basic desktop computer operations. This course contains material previously taught in GDT 140.

GDT 112   Principles and Problem Solving in Graphic Design   4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; GDT 104 minimum grade "C" or (GDT 106 and GDT 108, minimum grade "C")
45 lecture, 0 lab, 0 clinical, 45 other, 90 total contact hours

This course introduces fundamental graphic design principles and visual communication theories. Students produce dynamic visual compositions addressing matters of cognition, aesthetics, symbols, ideation and ethics with emphasis on creative expression and inventiveness. The title of this course was previously Graphic Communication I.

GDT 150   Design for the Internet   4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; GDT 106 and GDT 108, minimum grade "C"
45 lecture, 0 lab, 0 clinical, 45 other, 90 total contact hours

In this course, students will get an introduction to the process of designing and constructing Web sites. Students complete exercises and projects using current industry standard Web authoring and image editing software. Graphic design principles and methodologies are used to construct and post a multipage Website. Knowledge of vector drawing software is recommended.

GDT 151   Screen Printing   **4 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6; GDT 106 and GDT 108, minimum grade "C"
45 lecture, 0 lab, 0 clinical, 45 other, 90 total contact hours

This course introduces students to screen-printing techniques and methods. The class will be an integration of graphic design theory, computer technology and hands-on printing. Students will produce dynamic visual compositions from the initial concept to the final printed piece. Assignments will focus on the use of screen-printing in contemporary graphic design and real world products. Students with professional experience with Illustrator and Photoshop may contact the instructor for permission to waive the prerequisites.

GDT 174   GDT Co-op Education I   **1-3 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6; consent required
0 lecture, 0 lab, 0 clinical, 120 other, 120 total contact hours

Students are placed in approved industrial work experience to gain skills and knowledge offered by the employer. Together with the instructor and employer, students set up work assignments and learning objectives to connect classroom learning with career-related work experience.

GDT 214   Advanced Photoshop   **3 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6; GDT 108
40 lecture, 20 lab, 0 clinical, 0 other, 60 total contact hours

This course covers advanced features and uses of the image-editing software Adobe Photoshop. Exercises and production projects using the current version of Photoshop focus on developing skills and understanding of such topics as getting good scans, color spaces and profiles, tonal image correction, removing color casts, clipping paths, task automation and more. A good basic working knowledge of Photoshop is an essential course prerequisite. Students with equivalent experience may contact the instructor for permission to waive the prerequisite.

GDT 215   Typography II   **3 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6; GDT 100

30 lecture, 0 lab, 0 clinical, 30 other, 60 total contact hours

In this course, students will deepen their knowledge of typography beyond the fundamentals. This course will explore advanced typography concepts such as grid systems, refinement of text and display type, hierarchy and using typography to communicate the message effectively. Students with experience equivalent to GDT 100 may contact the instructor for permission to waive the prerequisite.

GDT 220   Publication Design   **4 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6; GDT 100 and GDT 112, minimum grade "C"
45 lecture, 0 lab, 0 clinical, 45 other, 90 total contact hours

This is a graphic design digital studio course that focuses on layout and design of publications. Students continue development of skills in the application of design and typographic principles and practices, and produce a variety of single and multiple-page publications for print and electronic devices.

GDT 239   Imaging and Illustration   **4 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6; GDT 106 and GDT 112
45 lecture, 0 lab, 0 clinical, 45 other, 90 total contact hours

In this course, the student develops skills with advanced digital tools, methodologies and concepts for communicating visual solutions with real world relevance. A variety of projects may include information graphics, rendering, editorial and interpretive illustration, spot illustration, and promotional illustration.

GDT 245   Digital Painting   **4 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6; GDT 108 and GDT 112, minimum grade "C"
45 lecture, 0 lab, 0 clinical, 45 other, 90 total contact hours

This course covers advanced skills in computer-based drawing and painting. Students integrate traditional and computer sketch development with industry-standard software tools and techniques to create artwork for commercial uses such as editorial, advertising, portraiture, character design and animation. Coursework explores gesture, line, form, perspective, color, shading, composition and development of personal style.

GDT 252   Advanced Digital Studio   **4 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6; GDT 220 minimum grade "C"
45 lecture, 0 lab, 0 clinical, 45 other, 90 total contact hours

This course offers advanced techniques and applications in computer-based imaging and publication design. Topics include design, illustration and electronic file preparation for offset printing involving integration of several professional graphics software programs. Advanced techniques in software such as Adobe PhotoShop, Adobe Illustrator and InDesign emphasize creative, real-world applications for graphic design production. Students who have equivalent experience may contact the instructor for permission to waive the prerequisite.

GDT 259   Graphic Communication II   **4 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6; GDT 106, GDT 108 and GDT 112, minimum grade "C"
45 lecture, 0 lab, 0 clinical, 45 other, 90 total contact hours

This course is an investigation into the process of visual communication; an interweaving of the graphic message, its theory, practice, technology, invention and function with the desire to create, design and illustrate. Students investigate the topics of nature, music, vernacular expression and statistical data as stimuli for solving industry-related types of assignments.

GDT 274   GDT Co-op Education II   **1-3 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6; consent required
0 lecture, 0 lab, 0 clinical, 120 other, 120 total contact hours

In this course, students gain further skills from continued experience in an approved, compensated, industry-related position. Together with the instructor and employer, students set up work assignments and learning objectives to connect classroom learning with career-related work experience.

GDT 290   Professional Practices   **4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; 48 credits in Graphic Design program; consent required
45 lecture, 0 lab, 0 clinical, 45 other, 90 total contact hours

This class prepares students for seeking employment in graphic design and illustration. Topics covered include graphic design and illustration career options/specialties, job hunting skills/techniques, freelancing, resume preparation, portfolio preparation and includes professional review of student portfolios. This course should be taken during the final semester prior to graduation. This course was previously GDT 230.

Health Information Technology   HIT

HIT 101   Healthcare Terminology for the Health Information Technology Professional   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

Healthcare Terminology for the Health Information Technology Professional introduces the student to the medical terminology used in the medical coding and reimbursement profession, and covers medical terminology and anatomy from a coder's perspective. This course would be valuable for anyone preparing for a career in any non-clinical medical profession, and strongly recommended for anyone who is preparing for any AHIMA or AAPC certification examination.

HIT 205   Introductory ICD Coding   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course is one of a series of four medical coding courses. Students are introduced to the process of transforming narrative descriptions of diseases and injuries into numeric and alphanumeric codes used to report and share patient healthcare issues with healthcare providers and insurers. An overview of both ICD 9 and 10 disease coding systems will be provided, and students will be given hands-on training in encoder usage.

HIT 210   Intermediate/Advanced ICD Coding   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; HIT 205
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course is one of a series of four medical coding courses. In this course, students will apply ICD-10 to complex coding scenarios including coding for Prospective Payment Systems (PPS) such as DRG, RUGS, HHRG, etc. Students will also learn about case mix analysis, severity of illness systems, and authentic coding and they will examine strategies for the implementation of coding compliance, auditing, reporting and quality monitoring.

HIT 215   Introductory Procedural Coding   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course is one of a series of four medical coding courses. In this course, students will be introduced to the principles and application of procedure coding systems such as ICD-9-CM Volume III and ICD-10-PCS, CPT 4 and HCPCS. Students will also learn about procedural groupings such as APC, and RUGs. Various other procedure coding systems will be reviewed.

HIT 220   Intermediate/Advanced Procedural Coding
3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; HIT 215
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course is one of a series of four medical coding courses. In this course, students will perform complex procedure coding assignments using CPT and HCPCS Level II codes, and learn about Medicare mandated resource based relative value scale payment schemas, ambulatory patient classifications, and coding for ambulatory surgery centers.

HIT 250   Medical Coding Practicum
3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; HIT 205, 215, BOS 223, BOS 224, CMC 121
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This practicum is the capstone course in the Medical Coding Certificate program. Students will function as student interns (not as employees) in host physicians' offices or healthcare facilities and will apply their skills in classification and coding of diseases and procedures and perform other related coding functions. The students' work will be supervised by WCC instructor(s) as well as healthcare office/facility staff.

Health Science   HSC

HSC 100   Basic Nursing Assistant Skills
4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 3
45 lecture, 30 lab, 25 clinical, 0 other, 100 total contact hours

This state approved 100 hour program prepares students for employment in a variety of health care settings from nursing homes, hospitals or home health care agencies where they will work as a nursing assistant. After the class is successfully completed, the student will be eligible to take the state clinical and knowledge tests for certification. Certification is required for employment as a nursing assistant in long-term care facilities.

HSC 101   Healthcare Terminology
1 credit

Level I Prerequisites: Academic Reading and Writing Levels of 6
15 lecture, 0 lab, 0 clinical, 0 other, 15 total contact hours

This course is designed to introduce healthcare professionals to terminology used in the workplace. Lecture material is supplemented by independent student computer assignments.

HSC 115   Clinical and Lab Procedures for Office Assistants
3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; HSC 101 minimum grade "C", may enroll concurrently
22.5 lecture, 37.5 lab, 0 clinical, 0 other, 60 total contact hours

This course consists of lecture and lab practice related to the role of the office assistant in a health care or medical office setting with emphasis on the clinical and lab procedures that may be performed in entry-level positions. Competencies will be evaluated in the areas of fundamental clinical and general patient care procedures, including how to recognize and respond to common office emergencies. This course is not part of an AAMA certification preparation program. The title of this course was previously Medical Office and Laboratory Procedures.

HSC 116 Phlebotomy for Healthcare Professionals
2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 3
30 lecture, 15 lab, 0 clinical, 0 other, 45 total contact hours

Through lecture and lab, students will learn basic anatomy, medical terminology, infection control, and procedures necessary to appropriately collect laboratory specimens and communicate effectively with patients. This course will prepare students for the Phlebotomy Technician certification exam offered by the National Healthcare Association (NHA) Certifying Board.

HSC 131 CPR/AED for the Professional Rescuer and First Aid
1 credit

Level I Prerequisites: No Basic Skills
15 lecture, 0 lab, 0 clinical, 0 other, 15 total contact hours

This American Red Cross CPR/AED first aid training program prepares students to respond to injuries and sudden illness. This course provides students with the knowledge and skills necessary to prevent, recognize and provide basic care for injuries and sudden illness. The course includes adult CPR/AED, child and infant CPR and first aid.

HSC 131B CPR/AED for the Professional Rescuer - Review
.5 credit

Level I Prerequisites: No Basic Skills
7.5 lecture, 0 lab, 0 clinical, 0 other, 7.5 total contact hours

This American Red Cross CPR/AED is a training program to prepare students to respond to sudden illness. This course provides students with the knowledge and skills necessary to prevent, recognize, and provide basic care for sudden illness. The course includes adult CPR/AED and child and infant CPR.

HSC 138 General and Therapeutic Nutrition
2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

This course presents normal nutrition and its relationship to health. It includes a study of the nutrients and nutrition planning guides. Nutritional needs throughout the lifecycle are studied. Concepts of general nutrition are applied to various diet therapies prescribed from common disease states in clinical practice. This course contains material previously taught in HSC 118 and HSC 128.

HSC 147 Growth and Development
3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; ENG 107 or ENG 111, minimum grade "C", may enroll concurrently
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course covers physical, cognitive and psychosocial changes of individuals from birth until death. The role of the family and theories of death and mourning also are included. This course meets the nursing program requirements and is also open to the general population.

Heating, Ventilation, and Air   HVA

HVA 101 Heating, Ventilation and Air Conditioning I
4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 2
75 lecture, 15 lab, 0 clinical, 0 other, 90 total contact hours

This course introduces the concept of thermodynamics and principles of refrigeration. Major units covered include HVAC mathematics, refrigeration systems, refrigerants, refrigerant tables, contaminants, dryers, moisture in the air, refrigeration components (i.e. compressors, condensers, evaporators, metering device motors and accessories) and defrost systems. The components and operation of residential furnaces will be discussed. An overview of heating and AC systems and components will be provided from an operation and service perspective.

HVA 102   HVAC Sheet Metal Fabrication   **4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 2
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This course offers an introduction to layout, design and fabrication of sheet metal with an emphasis on residential HVAC applications. Topics will include safety, sheet metal tools and equipment, fabricating HVAC duct using patterns and drawings, and installation techniques, standards and good practices. This course was previously TRI 103.

HVA 103   Heating, Ventilation, and Air Conditioning II   **4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 2
60 lecture, 30 lab, 0 clinical, 0 other, 90 total contact hours

This course covers basic electrical theory as applied to heating, ventilation, air conditioning and refrigeration systems. Students solve electrical problems, construct and troubleshoot series-parallel circuits, identify and troubleshoot electrical components, apply alternating current principles, identify, test and troubleshoot motors and motor control circuits, and interpret electrical diagrams and use them to troubleshoot HVACR systems.

HVA 105   Residential and Light Commercial Heating Systems   **4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 2 or MTH 067 may enroll concurrently; HVA
                        101 and HVA 103, minimum grade "C"; HVA 101 may enroll concurrently
75 lecture, 15 lab, 0 clinical, 0 other, 90 total contact hours

This course builds on the heating system skills and knowledge learned in prerequisite courses. Major units covered include HVAC mathematics, service and preventative maintenance for residential electric, gas, oil or hydronic and heat pump systems. Students get an overview of indoor air quality, air distribution and installation concepts and techniques. The title of this course was previously Heating, Ventilation and Air Conditioning III.

HVA 107   Residential and Light Commercial Air Conditioning Systems   **4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 2; HVA 101 and HVA 103, minimum grade
                        "C"
75 lecture, 15 lab, 0 clinical, 0 other, 90 total contact hours

This course offers a review of basic electrical and refrigeration principles needed for maintaining and troubleshooting equipment. Sequence of operational, mechanical and electrical failures are covered for residential and light commercial equipment. This includes logical diagnostic techniques which are simulated on both computer simulators and live lab equipment. The title of this course was previously Heating, Ventilation and Air Conditioning IV.

HVA 108   Residential HVAC Competency Exams and Codes   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 2; HVA 105 and HVA 107, minimum grade "C"

45 lecture, 15 lab, 0 clinical, 0 other, 60 total contact hours

Students will learn the relevant codes to residential heating, ventilation and air conditioning. Other topics include residential air conditioning requirements, proper operating conditions and servicing requirements. Students will take a nationally recognized competency exam upon completion of the course.

HVA 201   Energy Audits   4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; HVA 101 and HVA 103, minimum grade "C"

45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

This course prepares students to conduct an energy audit on residential, commercial and industrial structures and HVAC systems. Students gain an understanding of the current energy, building, and HVAC standards put out by organizations such as ASHRAE, and the U.S. Green Building Council's "LEED" program. Students will also be introduced to topics such as commissioning, ducts loss, building air infiltration, heat recovery, thermal storage and energy waste elimination.

HVA 202   Air System Layout and Design   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; HVA 101 and HVA 103, minimum grade "C"

45 lecture, 15 lab, 0 clinical, 0 other, 60 total contact hours

This course provides an overview of duct systems, air flow, design and analysis of indoor air quality issues. This includes components of air distribution systems, fan principles and sizing, noise troubleshooting and system pressure losses.

HVA 203   Refrigeration Systems   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; HVA 108 minimum grade "C"

45 lecture, 15 lab, 0 clinical, 0 other, 60 total contact hours

This course covers commercial refrigeration systems. This includes system operation, installation, maintenance and troubleshooting. Topics covered include: types of commercial refrigeration systems, evaporators, compressors, condensers, expansion devices, defrost, controls and cold storage principles.

HVA 204   Central Heating Plants   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; HVA 201 and HVA 202

30 lecture, 30 lab, 0 clinical, 0 other, 60 total contact hours

This course provides an introduction to large boiler system operations. Topics covered include: low and high pressure boilers, boiler heat exchangers, fuels, combustion, heat exchangers, pumps, large boiler control systems, water treatment, air handling equipment, maintenance and troubleshooting.

HVA 205   Hydronic Systems   **4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; HVA 108 minimum grade "C"
45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

This course covers an overview of hydronics which includes steam and hot water boilers. Major components are identified; safety and control systems are analyzed and inspected. Flow characteristics are examined for proper calculation of piping and radiator sizes. Electrical wiring of zoning systems is emphasized and practiced.

HVA 206   Central Cooling Plants   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; HVA 201 and HVA 202
30 lecture, 30 lab, 0 clinical, 0 other, 60 total contact hours

This course provides an introduction to large scale cooling operations. Topics covered include: absorption systems including ammonia and lithium bromide, water chillers, cooling towers, air handling systems, pumps, control systems, maintenance and troubleshooting.

HVA 207   Commercial Industry Standards with Competency Exams   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 3; HVA 203 and HVA 205, minimum grade "C"
45 lecture, 15 lab, 0 clinical, 0 other, 60 total contact hours

Students will learn the relevant codes to commercial heating, ventilation, air conditioning and refrigeration systems. Other topics include commercial air conditioning and refrigeration installation requirements, proper operating conditions and servicing requirements. Students will take nationally recognized competency exams.

HVA 208   Codes and Industry Standards with Industrial ICE   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; HVA 201 and HVA 202
30 lecture, 30 lab, 0 clinical, 0 other, 60 total contact hours

This course reviews various electrical, plumbing, and mechanical codes as well as HVACR industry standards for design, operation, and maintenance of HVACR equipment and systems in relation to industrial systems. The Industrial Industry Competency Exam (ICE) is also administered.

History   HST

HST 121   Western Civilization I   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course examines the essential social, cultural, political, economic and religious developments in Europe and the Mediterranean from ancient times to the Renaissance.

HST 122   Western Civilization II   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course examines the essential social, cultural, political, economic and religious developments in Europe from the Reformation to the end of the nineteenth century.

HST 123   The Twentieth Century   3 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course will examine the essential social, cultural, political and economic developments of the twentieth-century world, paying particular attention to the role of the United States in that world.

HST 150   African American History   3 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course will provide the student with a framework for understanding the ways in which African Americans have contributed to American history and culture by examining the significant cultural, social, political, economic and religious developments from 1619 to the present. While focusing on events in America, the course will also address important events in Africa that connect with African Americans.

HST 200   Michigan History   3 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

The Michigan History course is a review and analysis of the social, economic and political history of the State of Michigan. Within the purview of the course is the study of the full extent of human experience, from contact with the indigenous peoples, through the arrival and implantation of European culture. The significant historical periods covered are Colonization, Territorial Years, Development from 1836 to 1861, Civil War and Post-War Development, the Progressive Era, World War I, the Great Depression, World War II and Post-War developments. This course can fulfill the Michigan history requirement for Teacher Certification in Social Studies (RX).

HST 201   United States History to 1877   3 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course traces the development of the United States from its earliest beginnings up through the cataclysm of the Civil War and the subsequent Reconstruction Era. The approach is largely chronological, stressing cause and effect relationships, the roles played by prominent people, and the ways in which the events of the past have shaped contemporary society and its institutions.

HST 202   United States History Since 1877   3 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course traces the development of the United States from the end of the Reconstruction Era through the late 20th century. The approach is largely chronological, stressing cause and effect relationships, the roles played by prominent people, and the ways in which the events of the past have shaped contemporary society and its institutions.

HST 210   U.S. Women's History   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course examines the political, economic, social and cultural contributions of women to the development of the United States, as well as the changing role of women in the formation of the nation's identity. The course also considers the ways in which race and ethnicity shape the differing experiences of women in American society.

HST 215   History of U.S. Foreign Relations   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course traces the history of U.S. foreign policy from the Revolutionary era to the present. It will address the relationship between the American economic, social, and political systems and the conduct of the nation's foreign policy. The role played by race, economics, ideology, and "national interest" will be assessed. Emphasis will be placed on the conduct of diplomacy immediately before, during, and after periods of military conflict. The conduct of the Cold War will be reviewed in detail.

HST 216   U.S. Military History, Colonial Times to Present   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

 This course traces the American military from its pre-colonial origins to the present. It addresses the relationship between the American economic and social systems and the nation's military, and addresses the effect of the nation's geography on the mission and organization of the military. Key conflicts such as the American Revolution, the Civil War, the Second World War, and the Vietnam conflict are addressed in detail in an effort to discern if there is a unique "American Way of War."

HST 220   The Civil War Era, 1845 - 1877   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course deals with the causes, conduct and impact of the American Civil War. It focuses on the political, social, economic, and racial background to the conflict, the conduct battles and campaigns, the formulation of strategy, the mobilization of the nations' societies and economies, wartime diplomacy and politics and the numerous issues surrounding Reconstruction. The course will assess the impact of the war on the nation's society, political system, and economy.

HST 230   History of the Holocaust   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course investigates the origins, development and legacies of the Nazi onslaught against the European Jews from 1933 to 1945.

HST 235   African History   3 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

The African History course is a survey of the development of African society, its culture and institutions, with emphasis on the 13th century to the present. It will address the effects of Christianity, Islam, the slave trade and colonialism on the African continent. Emphasis will also be placed on the process of decolonization and industrialization of modern Africa.

HST 240   The History of the Modern Middle East, 1798 - Present   3 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course provides an introduction to the history of the modern Middle East from the end of the eighteenth century to the present, focusing on the territories of the Ottoman Empire and its successor states. Major topics and themes will include Ottoman and Islamic institutions, the decline of the Ottoman and Persian empires and the rising influence of European powers, the emergence of Arab nationalism, the origins and development of the Arab-Israeli conflict, the emergence of radical Islamic movements and contemporary events.

HST 251   War in the Modern World, 1500 - Present   3 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course deals with war and military institutions in Europe and North America since the beginnings of modern states (about 1500), while placing particular emphasis on the more recent period, from just before the American and French Revolutions to the present time. Its focus is on the interaction of warfare - a changing set of techniques and technologies - with the broader political, social, economic and intellectual aspects of war as well as with the aftermath of war. Some attention is given to particular military campaigns and battles, but mainly to make clear the technical aspects of war and to illustrate important trends and patterns. The approach of the course is comparative, between the differing histories of nation-states, and between the divergent military experiences of Europe and North America. While touching on the global experience of war during the last four centuries, the course aims to explain the central role played by war in the history of the modern Western world.

HST 260   History of England to 1688   3 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course will provide the student with framework for understanding the various ways in which the English have influenced American history and culture by examining the essential social, cultural, political, economic and religious developments in the British Isles from ancient times to 1688. While focusing on England, the course will also address important developments in Ireland, Scotland and Wales.

HST 270   History of China   3 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course offers an introduction to the political, economic, social and cultural history of China. After addressing the Ancient and Imperial periods, the emergence of modern China in the 20th century is examined in detail. The course also considers the factors leading to China's emergence as a global power in the 21st century.

Human Services Worker　　　　　　　　　　　　　　　　　　　　　　　　　　　HSW

HSW100　　Introduction to Human Services　　　　　　　　　　　　　　3 credits
Level I Prerequisites:　　Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course is an introduction to basic human services. It includes discussions of major target populations, the major helping professions, the social context and the history of helping, roles performed by professional helpers, intervention skills, values and ethical and legal considerations. Students are challenged through group discussions to determine whether the field is suitable for them and whether their values are congruent with values espoused by human service professions.

HSW200　　Interviewing and Assessment　　　　　　　　　　　　　　3 credits
Level I Prerequisites:　　Academic Reading and Writing Levels of 6; HSW 100 minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students are introduced to basic interviewing skills used in helping professions, as well as the process of individual needs assessment. Students will learn both attending and influencing skills. In addition, they will learn how to write goals, objectives and program notes in the context of a client intervention strategy.

HSW225　　Family Social Work　　　　　　　　　　　　　　　　　　3 credits
Level I Prerequisites:　　Academic Reading and Writing Levels of 6; HSW 100 or SOC 100, minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course introduces students to the theory and practice of social work with families. Students will learn how to describe American families as social systems, how to describe the structure of a family and how to identify common patterns in family functioning. Common problems and special circumstances in family functioning will be addressed. Students will learn to identify effective ways to engage families. Basic social work interventions with families will be described.

HSW230　　Field Internship and Seminar I　　　　　　　　　　　　3 credits
Level I Prerequisites:　　Academic Reading and Writing Levels of 6; HSW 100, HSW 200 and SOC 220, minimum grade "C"; consent required
15 lecture, 0 lab, 0 clinical, 180 other, 195 total contact hours

This course integrates students into the working world by having them complete field work in human service agencies. The students have an opportunity for a variety of experiences based on their placement. The field work will be integrated with course work during a one hour seminar. Learning objectives will be individualized according to the field internship and career goals of each student. Instructor approval for enrollment in this course will be based on previous course completion, documented acceptance to HSW program, exhibiting behaviors as described in the HSW student handbook and a secured placement.

HSW232　　Field Internship and Seminar II　　　　　　　　　　　3 credits
Level I Prerequisites:　　Academic Reading and Writing Levels of 6; HSW 100, HSW 200, HSW 230 and SOC 220, minimum grade "C"
15 lecture, 0 lab, 180 clinical, 0 other, 195 total contact hours

This course integrates students into the working world by having them complete field work in a human service agency. The student will complete this internship at a different agency from the internship held in HSW 230, or will hold a significantly different role in the same agency. The field work will be integrated with course work during a one hour per week seminar. Learning objectives are individualized according to the field internship and career goals of each student.

HSW296   Neuropsychology of Addiction   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students explore the relationship between the physiological makeup of the body and its impact on the addictive nature of drugs and alcohol. By the end of this course, students will have a strong understanding of how neurotransmitters and the chemical makeup of the brain are influenced by drugs. Students explore the role that stimulants, depressants, and hallucinogenics play in altering brain chemistry, the impact of withdrawal, and the basic concepts of detoxing. In addition, students will be introduced to different classifications of prescription medications used in treating mental illness.

HSW297   Assessment of Co-occurring Disorders   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students receive an overview of tools used to assess the co-occurrence of mental illness and substance abuse. Students are introduced to basic mental illness concepts presented in the current Diagnostic and Statistical Manual (DSM) and explore the influence and interaction of substance abuse related to mental illness. In addition, students will be provided with ethical guidelines related to working with assessing and treating addiction.

HSW298   Treatment of Addiction   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; HSW 296 and HSW 297, minimum grade "C"; may enroll
                concurrently in both courses
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this capstone course, students will integrate theory into the practice of treating addictions. Students will apply the theoretical foundations to treating addiction and learn about possible barriers associated with treatment. By the end of this course, students should have a basic understanding of treatment options and begin to demonstrate the skills used with each option.

Humanities   HUM

HUM101   Introduction to the Humanities - Ancient to Medieval   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
Level II Prerequisites: Computer Literacy
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course introduces students to various cultures and cultural periods from the dawn of human creativity through the Middle Ages. It explores the creative disciplines of human artistic output focusing on the Cradles of Civilization and the Western World. This course may be presented in chronological or topical format. Classes will cover a minimum of 5 cultures through various interdisciplinary media. Cultures: Prehistory, Mesopotamia, Egypt, Aegean, Greece, Rome, Middle Ages. Media: History, Visual Arts, Architecture, Literature, Philosophy, Music, and Religion. This course was previously Humanities I - Ancient to Medieval Times.

HUM102   Introduction to the Humanities - Renaissance to Modern   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
Level II Prerequisites: Computer Literacy
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course introduces students to various cultural periods from 1250 through the early 20th Century. The creative disciplines of human artistic output are explored, focusing on the Western World. This course can be presented in chronological or topical format. Classes will cover a minimum of 5 cultures through various interdisciplinary media. Periods: Renaissance, Mannerism, Baroque, 18th Century (Rococo, Neoclassicism, Romanticism, Realism), 19th Century (Academic Art, Impressionism) and 20th Century up to WWII. Media: History, Visual Arts, Architecture, Literature, Philosophy, Music and Religion. This course was previously Humanities II - Renaissance to Modern Times.

HUM 103   Introduction to the Humanities - 20th Century to Present   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
Level II Prerequisites: Computer Literacy
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course introduces students to various artistic periods and movements from the early 20th Century to the Present. The creative disciplines of human artistic output are explored, focusing on the Western World. This course can be presented in chronological or topical format. Classes will cover a minimum of 8 movements through various interdisciplinary media. Movements (selection): Dada, Surrealism, Cubism, Fauvism, Expressionism, Abstract Expressionism, Pop Art, Minimalism, Realism, Harlem Renaissance, Conceptual Art, Post-Modern, etc. Media: History, Visual Arts (including Photography and Film), Architecture, Literature, Philosophy, Music and Religion. The title of this course was previously Introduction to Humanities - 20th Century.

HUM 120   Introduction to Film   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course is a study of motion pictures from a variety of eras and cultures. Instruction will cover various elements of the creative process involved in film making including the following: narrative, acting, mise-en-scene, editing, cinematography and sound. Students will develop the skills necessary to critically and technically evaluate one of the most dynamic and influential art forms of the past 100 years.

HUM 145   Comparative Religions   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
Level II Prerequisites: Computer Literacy
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students are introduced to beliefs and religious practices from around the world and explore the relationship between society and religion as well as the impact of religion on people's lives. This course can be structured according to religions or according to core themes. Classes will cover at least 5-6 different religions and a variety of core themes. Religions: Paganism, Shamanism/Animism, Judaism, Christianity, Islam, Shinto, Taoism, Confucianism, Hinduism, Buddhism, Jainism, Baha'i. Core themes (selection): Gods and Goddesses, Scriptures, Rituals and Symbols, Death and Afterlife, Creation, Moral Guidance, Ultimate Reality, Religious Law, Worship Practices and Temples.

HUM 146   Mythology   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
Level II Prerequisites: Computer Literacy
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students are introduced to myths from around the world, and explore mythological themes and the relationship between culture and myths. Course content touches on other disciplines including psychology, sciences, arts and literature. This course can be structured according to cultures, core themes or archetypes. Classes will cover at least 5-6 different cultures and a variety of core themes. Cultures: Greek, Roman, Celtic, Norse, Native American, Arctic, Asia, Americas, Africa, Middle East. Core themes (selection): Creation, Gods and Goddesses, Heroes, Demons, Animals, Underworld, Quests, Afterlife, and Worlds Destroyed (Floods).

HUM 150   International Cinema   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students study the evolution of foreign films made between the 1890s and the present. Major filmmakers and film movements are reviewed through examination of film content and cinematic techniques. Films will also be evaluated as reflections of their time and place.

HUM 160   American Film   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

The development of American cinema from its beginnings in 1891 to the present is studied. The films, viewed in class, are discussed in terms of technique as well as in terms of content. The course relates American cinema to themes in American culture.

HUM 170   Montreal World Film Festival   2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

This brief course will be held at the Montreal World Film Festival in late August. Students travel to Montreal to attend screenings of films at the Festival. This course will appeal to those with an interest in film or in cross-cultural travel as it offers both intensive film-viewing and an introduction to the largest French-speaking community in North America. The course fee will cover round-trip train travel from Windsor, hotel accommodations in Montreal, passes to ten Festival films and the Festival program guide. Orientation sessions will be held both on campus and in Montreal.

HUM 175   Arts and Cultures of Middle East (3000 BCE - 1800 CE)   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course focuses on the arts and cultural achievements of the middle east from ancient times through the Ottoman Empire. It explores the political, social and cultural ramifications of various events in the arts, literature, music, philosophy and architecture of the area, with an emphasis on the Islamic period. The student explores the human experience in Middle Eastern culture through the evolution of artistic expressions.

HUM 185   The Horror Film   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course is a study of the horror film with emphasis on cultural relevance and aesthetic qualities. The student will explore cinematic expressions of the horror genre in terms of technique as well as content. Both feature films and documentaries will be viewed and analyzed.

HUM 220   Great Directors   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; HUM 120 and HUM 160, minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students will study the works of influential directors from a variety of eras and cultures. The focus will be on the individual creativity of the director as a powerful force in determining the aesthetic elements of the films which he/she produces. Instruction will cover classical auteur theory as well as more recent theories of authorship.

HUM 221   Film and Representation   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; HUM 120 and HUM 160, minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course is a study of the way American films have represented race, class, gender, sexuality and ability throughout history. Instruction will emphasize the acquisition of analytical skills relevant to film and cultural studies. Students will develop the knowledge and skills to critically evaluate various representations of diversity within American film. Additionally, they will gain insight into the ways in which cinematic images of these different minority groups shape the way in which people are perceived in everyday life.

Internet Professional   INP

INP 140   Building a Web Site   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course takes students through the process of planning and organizing a Web site, as well as creating Web pages using an industry standard tool (such as Dreamweaver). Students will learn basic HTML, CSS and how to publish Web pages on a Web server. This course is for students with no knowledge of HTML, but who need to understand the basics of Web publishing. It is not intended for those intending to become Web developers.

INP 150   Web Coding I   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course is an introduction to Web page creation using Extensible Hypertext Markup Language (XHTML) and Cascading Styles Sheets (CSS). Pages are authored in a text editor and published on a Web server using an SFTP program. Major areas of emphasis include creating valid Web pages, building an appropriate document structure and using modern formatting techniques. Credit by examination is available for students with prior industry experience; interested students should consult with an INP faculty member.

INP 153   Designing User Experience I   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students learn the principles and practices of user-centered design, as well as the fundamentals of information architecture and interface design for the Web. The focus will be on critical evaluation of existing Web sites, and creating deliverables that a user experience professional would typically produce. Upon completion of this course, students will have a working knowledge of approaches, tools and techniques pertaining to a variety of Web topics such as content design, interface design, navigation, organization, labeling and site mapping.

INP 154   Interaction Design I   **4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; GDT 100 and GDT 112; GDT 104 or GDT 105, minimum grade
                              "C" all courses
45 lecture, 0 lab, 0 clinical, 45 other, 90 total contact hours

This course is an introduction to the fundamentals, tools and techniques of interface design. Visual communication and user centered design principles are emphasized as students design large form factor (e.g., desktop/laptop), small form factor (e.g., smartphone), and mobile application interfaces. Students use design ideation and exploration techniques as they develop interfaces that reflect industry norms and trends.

INP 170   Web Coding II
3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; INP 150 minimum grade "C" or INP 150 Test minimum score 70%

Level II Prerequisites:

45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course focuses on advanced client-side coding for the Web. Various approaches to coding graphical layouts are the primary emphasis and students will be creating valid, standards-compliant pages that render properly cross-browser and cross-platform. Additional topics include accessible markup, media-specific styling, filters and image replacement. XML and related languages are also considered. Students will also prepare graphic assets for web development.

INP 174   Internet Professional Co-op I
1-3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; consent required
Level II Prerequisites: Complete two INP core courses and two courses in the option
0 lecture, 0 lab, 0 clinical, 120 other, 120 total contact hours

Co-op courses provide the student with worksite skills and experience in an approved, compensated position related to their chosen field of study. Together with an instructor, an employer, and the Workplace Learning Center, the student determines work assignments and learning objectives to connect classroom learning with career-related work experience. Registration for a cooperative education course requires attendance at a co-op orientation.

INP 182   Web Graphics II
3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; INP 152 minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course focuses on intermediate Web interface and design techniques that focus on whole-site design, alternative layout styles and the preparation of images for Web development. Topics include designing for specific clients and audiences, alternate layout strategies and intermediate graphic and interface design strategies. This class challenges students to incorporate different design strategies, technologies and style into Web interfaces. Industry-standard software applications for Web design will be used in a PC-based classroom.

INP 203   Designing User Experience II
3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; INP 153 minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students will gain experience with various methods for evaluating and improving Web site usability and accessibility. In exploring the area of accessibility, the students will use adaptive technology to better understand how users with disabilities experience Web sites. Students will also explore the user experience of everyday devices.

INP 233   Web Analytics and SEO
3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; INP 150 and INP 153, minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students will learn about the technologies and techniques used to increase Web site traffic, as well as how to track user activity and evaluate the impact of Web site changes via analytics. Search engine optimization and the role of social and interactive media in driving user behavior are given significant focus.

INP 253   Designing User Experience III   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; INP 203 minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students will learn user experience best practices for a wide variety of Web environments and topics, including mobile devices, internationalization, AJAX and content management systems. Students will prototype user interfaces based on these best practices and document specifications in use cases.

INP 254   Interaction Design II   4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; INP 154 minimum grade "C"
45 lecture, 0 lab, 0 clinical, 45 other, 90 total contact hours

This course focuses on responsive design and the design of multi-page interactions. Responsive design will involve a series of interfaces that progress from small to large devices, with each design emphasizing the strengths of the current medium. Emerging industry trends and contemporary Web development methods will play a significant role in the design ideation and exploration process.

INP 261   Introduction to Web Programming   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; INP 170 minimum grade "C"

45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course provides a foundation in programming for the Web. Server-side programming will be in PHP and client-side programming will be in JavaScript. Successful completion of this course allows students to progress to the higher-level INP programming courses.

INP 271   Client-Side Web Programming   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
Level II Prerequisites: INP 261
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This is an advanced course in JavaScript for Web development. Accessible, unobtrusive and standards-compliant coding techniques are stressed. AJAX and various APIs will be given significant consideration. Students must have the JavaScript foundation from INP 261 or previous JavaScript programming experience to be successful in this course (usage of frameworks/libraries alone is insufficient). Students must be proficient in XHTML and CSS and have prior programming coursework or experience. The title of this course was previously Web Coding III.

INP 274   Internet Professional Co-op II   1-3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; INP 174; consent required
0 lecture, 0 lab, 0 clinical, 120 other, 120 total contact hours

Co-op courses provide the student with worksite skills and experience in an approved, compensated position related to their chosen field of study. Together with an instructor, an employer, and the Workplace Learning Center, the student determines work assignments and learning objectives to connect classroom learning with career-related work experience. Registration for a cooperative education course requires attendance at a co-op orientation.

INP 275   Web Database   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
Level II Prerequisites: INP 261
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course provides an introduction to database concepts and the implementation of database-driven Web applications using ASP.Net. Students will learn C# and SQL and will use industry standard development tools and databases. No prior database experience is required, however students are expected to have some prior programming experience as well as proficiency in XHTML and CSS. This course was previously INP 283.

INP 276   Mobile Web Development   4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; INP 281 minimum grade "C"
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This course focuses on Mobile Web Development using various frameworks. Primary languages will be HTML5, CSS and JavaScript. The course does not focus on any specific mobile platform but instead focuses on solutions that work across a range of devices and operating systems. This title of this course was previously Rich Internet Application Programming.

INP 281   Server-Side Web Programming   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; INP 271 and INP 275, minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course focuses on Python for Web development. Server-side concepts are stressed, including authentication, sessions, data storage and retrieval and modular Web development. The title of this course was previously Web Coding IV.

INP 284   Web Graphics IV   4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; INP 212 minimum grade "C"
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This course is an introduction to the methods and philosophies of information design as they apply to interface design. By using the principles and practices of information design, such as sequencing, memory strings, wayshowing and wayfinding, students will create Web information that is both accessible and usable. This course is designed to step students through a typical information design project from pre-testing to prototype development and post-testing.

INP 291   Programming with HTML5 and CSS3   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; INP 271 and INP 275, minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course focuses on the technologies and standards that will shape the future of the Web. HTML5 and CSS3 are examples of the emerging standards that will be considered, along with additional languages and technologies on the cutting edge of Web development. The title of this course was previously Emerging Web Technologies.

Iron Workers of America   IWA

IWA 120   Introduction to Ironwork   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course in an introduction to ironworking for new apprentices. Course topics include job safety and health, blueprints and mathematics for ironworkers. Students will be introduced to oxy-acetylene cutting and safety in the classroom before completing hands-on assignments. This course is only available for Ironworker apprentices through the Local 25 training center.

IWA 122   Ironworker - General Rigging   **2 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

This course introduces scaffold erecting, scaffold dismantling, and basic rigging along with cranes and other rigging power equipment. Topics include safety, signals, calculations, fiber and wire ropes, hardware, slings and reeving. Students will use differing tools and devices for rigging including cranes, fork trucks, tuggers, gantries and truck loading. Load security and student safety is emphasized. This course is only available for Ironworker apprentices through the Local 25 training center.

IWA 131   Introduction to Metal Building   **2 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

This course provides an overview to metal building erection and finishing for new apprentices. Topics include primary and secondary framing and wall sheeting. This course is only available for Ironworker apprentices through the Local 25 training center.

IWA 141   Introduction to Reinforcing Ironwork   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course is an overview of reinforcing ironwork for new apprentices. Topics include material property and related CRSI and ACI codes and specifications. Students will develop additional blueprint reading skills specific to reinforcing steel. Various types of structures will be reviewed and students will be introduced to splicing and coupling. This course is only available for Ironworker apprentices through the Local 25 training center.

IWA 151   Rigging/Machinery Mover I   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course focuses on advanced rigging skills including machinery moving, disconnecting power and hydraulic lines and the basics of reinforced steel. Students will practice loading, hauling, unloading, setting, aligning, laser leveling and grouting. Emphasis will be placed on reading and interpreting blueprints for proper positioning and application to different types of reinforced steel structures. This course is only available for Ironworker apprentices through the Local 25 training center.

IWA 155   Rigging/Machinery Mover II   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course introduces conveyor systems, their uses, and maintenance requirements. Terminology, systems components, basic installation, devices and mechanisms will be covered. Rigging as it applies to different types of structural details will be emphasized. This course prepares students to take the Crosby Master Rigging and CDL Certification tests. This course is only available for Ironworker apprentices through the Local 25 training center.

IWA 161   Introduction to Architectural and Ornamental Ironwork   **2 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

This course covers architectural wall systems. Students will learn about curtain wall systems, window wall systems, sloped walls, cable walls, skylights and testing. Students will gain experience erecting storefronts, entranceways and glass rails. Students will be introduced to sealants and glazing systems. This course is only available for Ironworker apprentices through the Local 25 training center.

IWA 172   Introduction to Structural Features   **4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This course provides an overview of the structural features of a building. Students will also be introduced to instruments, tools and fasteners with a focus on leveling and anchors. Topics include erecting columns, band beams, joists and trusses, plumbing and aligning, decking and various types of bolts. Classroom training will be supplemented with hands-on experience. This course is only available for Ironworker apprentices through the Local 25 training center.

IWA 191   Reinforced Iron and Structures for Rigging   **4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This course is an overview of reinforcing ironwork for new apprentices. Reinforcing iron topics include material property and related CRSI and ACI codes and specifications. Structural topics include erecting columns and beams, joists and trusses, plumbing and aligning, decking and various types of bolts. This course is only available for Ironworker apprentices through the Local 25 training center.

IWA 201   Introduction to Welding   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course continues the theory and practice of welding. Students learn Oxy-Acetylene cutting and welding in addition to shielded arc welding. Students receive instruction in welding symbols, details, procedures, codes, qualifications, inspections and FEMA requirements. Related safety is covered. Students are encouraged to take and pass the SMAW certification test. This course is only available for Ironworker apprentices through the Local 25 training center.

IWA 224   Labor and Trade History   1 credit
Level I Prerequisites: Academic Reading and Writing Levels of 6
15 lecture, 0 lab, 0 clinical, 0 other, 15 total contact hours

The history and future of labor and trade unions with particular emphasis on Ironworkers will be discussed. Students will be introduced to skills and practices needed to be a foreman for ironworkers. This course is only available for Ironworker apprentices through the Local 25 training center.

IWA 235   Advanced Metal Building   2 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

This course provides hands-on experience in metal building erection and finishing. Students will install insulation, siding, metal roofing, flashing and trim. This course is only available for Ironworker apprentices through the Local 25 training center.

IWA 241   Advanced Reinforcing Ironwork   7 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6
105 lecture, 0 lab, 0 clinical, 0 other, 105 total contact hours

This course continues training for reinforcing ironwork with emphasis on ACI codes 318 and 117 and the CRSI Manual of Standard Practices. Students will focus on unbonded mono-strand and bonded post tensioning installations, stressing, blueprints and troubleshooting. This course is only available for Ironworker apprentices through the Local 25 training center.

IWA 265   Advanced Architectural and Ornamental Ironwork   6 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6
90 lecture, 0 lab, 0 clinical, 0 other, 90 total contact hours

This course continues training for architectural and ornamental ironworkers. Students will install several different mock-up systems focusing on correct installation of metal and composite wall panel systems, associated trim and openings. The selection of wall systems based on structural and metal building types will be discussed. This course is only available for Ironworker apprentices through the Local 25 training center.

IWA 272   Advanced Structural Features   3 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course covers topics such as bridges, towers, wind turbines, stair stringers and other unique layouts. This course is only available for Ironworker apprentices through the Local 25 training center.

Ironworker Instructor Training   IWT

IWT 101   Principles of Instruction and Instructional Planning   1.5 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 0 lab, 0 clinical, 0 other, 22.5 total contact hours

In this course, the participant is provided an opportunity to get up in front of the course participants and make a short presentation. Topics include introducing and summarizing a classroom presentation, presenting an interactive presentation, presenting a demonstration, and questioning and reinforcement techniques. Participants are also taught how to plan and conduct courses within the local union's curriculum. In addition, participants will learn how to develop a course syllabus, write learning objectives, plan for teaching in the classroom and shop components of a course, use Ironworker training packages, and use basic audio-visuals. Participants will also

learn how to administer tests, record test results, complete a grade book, and determine if an apprentice has passed a course. Limited to Ironworker Instructor Training program participants.

IWT 102   Testing Strategies, Communication and Motivation   **1.5 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 0 lab, 0 clinical, 0 other, 22.5 total contact hours

Developing and administering knowledge and skill tests are covered in this course. Participants will learn to plan for developing tests and then administering tests using multiple-choice, true-false, matching, and completion test items. Participants will also learn to administer and score performance or skills tests. Additional focus is on techniques and strategies for motivating adult learners in an instructional setting and developing good communication and listening skills. Also addressed is the issue of classroom discipline and control. Role-playing and simulation activities are included. Limited to Ironworker Instructor Training program participants.

IWT 103   Illustrated Lectures and Facilitation Skills   **1.5 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6; IWT 101
22.5 lecture, 0 lab, 0 clinical, 0 other, 22.5 total contact hours

The focus of this course will be on further developing the classroom skills of experienced instructors. Participants will prepare and deliver one or more presentations during micro-training exercises. Classroom instruction will be delivered primarily through PowerPoint presentations and teaching demonstrations. The course focus is also on facilitation and classroom training skills the participant can use to make classroom sessions more interactive and participatory. In this course, participants will learn how to develop and use small-group activities including case studies and role-plays. Participants will also learn how to facilitate brainstorming sessions and how to lead discussions. Limited to Ironworker Instructor Training program participants.

IWT 130   Introduction to Computers   **1.5 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 0 lab, 0 clinical, 0 other, 22.5 total contact hours

This course is designed for participants who have never (or rarely) used a computer. Working in Windows 7, participants will learn about common computer terminology, hardware and software. This course is structured to maximize the student's understanding of computers through a lecture-based and hands-on approach. Topics include keyboarding, how to use a mouse, file management (how to create, save, move, delete, and manipulate files), basic word processing (Microsoft Word), how to back up files to a CD, how to transfer files using a USB flash drive, how to set up an LCD projector, and how to send and receive e-mail. This course will not include PowerPoint, Access or Excel. Limited to Ironworker Instructor Training program participants.

IWT 131   Computer Applications I   **1.5 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6; IWT 130 or related computer experience
22.5 lecture, 0 lab, 0 clinical, 0 other, 22.5 total contact hours

In this course, the participant is introduced to Microsoft Word and PowerPoint. Topics include the fundamentals of formatting and creating documents (e.g., letters, handouts, PowerPoint presentations, and tests), graphics, and tips and tricks of the Internet. The participant will develop realistic course materials and present the solutions at the end of the week. Limited to Ironworker Instructor Training program participants.

IWT 132   Computer Applications II   **1.5 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; IWT 131 or extensive experience with Microsoft Office
22.5 lecture, 0 lab, 0 clinical, 0 other, 22.5 total contact hours

This course is designed for the participant who has completed the Computer Applications I (IWT131) course or has extensive experience with Microsoft Office. Upon completion of this course, the participant will be able to use Microsoft Access and Excel. Instruction on advanced formatting within Microsoft Word and PowerPoint will also be included. Topics include the fundamentals of creating databases and spreadsheets (e.g., mailing lists, inventory records, and grading systems), integrating blueprints and photo images, and how to use the Internet. The participant will develop relevant training materials and present the solutions at the end of the week. Limited to Ironworker Instructor Training program participants.

IWT 201   Working with Learners with Special Needs   **1.5 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 0 lab, 0 clinical, 0 other, 22.5 total contact hours

The focus of this course is on the challenges created for apprenticeship instructors who work with learners with special needs in classroom and shop environments. Participants will become familiar with categories of special-needs learners and general characteristics (e.g., learning disabled, limited English speaking, substance abuse, emotional problems, and reading/math difficulties) as well as a menu of helpful instructional strategies. Information on learning styles and teaching styles will also be addressed. Limited to Ironworker Instructor Training program participants.

IWT 203   Bonded Post-Tensioning Ironworker Certification   **1.5 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 0 lab, 0 clinical, 0 other, 22.5 total contact hours

In this course, students will receive instruction on the installation of bonded post-tensioning systems, including multi-strand and bar systems used in bridges, superstructures and buildings. New curriculum materials and instructors guide will be used and will encompass installation, stressing, and grouting procedures. Day three of the course will include hands-on training in the skill practice area, so participants should dress appropriately. At the conclusion of this course, a representative from the Post-Tensioning Institute (PTI) will administer the certification examination for bonded post-tensioning. Limited to Ironworker Instructor Training program participants.

IWT 204   Reinforcing Concrete for Your Apprenticeship Programs   **1.5 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 0 lab, 0 clinical, 0 other, 22.5 total contact hours

This "train-the-trainer" course uses dynamic teaching techniques to introduce the Reinforcing Concrete for Ironworkers training package available from the National Fund. This course will introduce the reference manual, student workbook, instructors guide, blueprints, and DVD that contain the latest information on concrete reinforcing materials, tools, and techniques. Limited to Ironworker Instructor Training program participants.

IWT 205   Foreman Training for Ironworkers   **1.5 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 0 lab, 0 clinical, 0 other, 22.5 total contact hours

This course is designed to develop skilled Ironworker foremen. During this course, the participants will learn the roles and responsibilities of the foreman. In addition, they will learn how to create an effective work team, communicate effectively, apply problem-solving skills, document and maintain records, maintain labor-management relations, plan and schedule work, implement a safety program, and ensure the quality of work. Limited to Ironworker Instructor Training program participants.

IWT 207   Teaching the History of the Ironworkers Union   **1.5 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 0 lab, 0 clinical, 0 other, 22.5 total contact hours

This course will enable the participants to teach the history of the Ironworkers Union as well as to discuss major events in American labor history. The evolution of construction technologies and the effect these changes had on our union will also be examined. Limited to Ironworker Instructor Training program participants.

IWT 208   Operating Layout Instruments   **1.5 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 0 lab, 0 clinical, 0 other, 22.5 total contact hours

This course will provide the necessary skills to use layout equipment during the erection of all facets of the Ironworking trade (e.g., structural steel, precast concrete, curtain wall/window wall, metal buildings, and rebar). The course will consist of hands-on training using several different types of instruments. Limited to Ironworker Instructor Training program participants.

IWT 209   Ironworker COMET Train-the-Trainer   **1.5 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 0 lab, 0 clinical, 0 other, 22.5 total contact hours

This course will enable the participants to deliver the Construction Organizing Membership Education Training (COMET) program for Ironworkers developed for the AFL-CIO Building and Constructions Trades Department by Cornell University and the George Meany Center. COMET is an important prerequisite to an effective construction-organizing campaign in that it emphasizes membership awareness and enlists broad support for organizing activities. Limited to Ironworker Instructor Training program participants.

IWT 210   Approved MSHA Instructor Course   **1.5 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6; Resume detailing teaching and work experience related to mining
                             operation must be presented the first day of the course.; Submit current Red Cross (or equivalent)
                             certification and the National Fund OSHA 500 Instructor card to the Safety Department according to due
                             date stated in course catalog
22.5 lecture, 0 lab, 0 clinical, 0 other, 22.5 total contact hours

This course will provide the participants with a detailed presentation of the Federal Mine Safety & Health Administration's (MSHA) training requirements (CFR Title 30 Part 46, and Part 48) for personnel employed at mine facilities. It will introduce the participants to the training materials developed by the National Fund and MSHA, including an overview of a surface mine operation (conveyors, ball mills, crushers, etc.). Upon completion of the course, the participant's name will be submitted to the Department of Labor for approval as an instructor of Surface or Underground Mining Training. Limited to Ironworker Instructor Training program participants.

IWT 211   Rigger Trainer Development Program   **1.5 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 0 lab, 0 clinical, 0 other, 22.5 total contact hours

This Rigger Trainer Development Program will cover fundamental and advanced rigging concepts with emphasis on proper rigging techniques per ASME (American Society of Mechanical Engineers), OSHA, and manufacturing recommendations. Each course session will incorporate both a classroom presentation as well as the opportunity to work in a workshop setting to solve various real-world rigging problems. Participants will be instructed on the new B30.26 "Rigging Hardware" standard that went into effect in 2006, and information will be shared on the B30.9 "Sling" update. Other topics discussed will be proper selection and application of blocks, plate clamps, steer erection standard, rigging math, and a computer tools workshop to make participants aware of the various Crosby Rigging CD-ROMs that may be used to educate others. Limited to Ironworker Instructor Training program participants.

IWT 212   Conveyor Installation and Industrial Maintenance   **1.5 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 0 lab, 0 clinical, 0 other, 22.5 total contact hours

This course will provide the participant with an overview of the installation of and the theory behind various types of conveyor equipment used in the manufacturing sector. It will also cover the theory and practice behind industrial maintenance techniques on various mechanical installations in this sector. Limited to Ironworker Instructor Training program participants.

IWT 214   Structural Steel Erection   **1.5 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 0 lab, 0 clinical, 0 other, 22.5 total contact hours

The objective of this course is to enable participants to build a structural steel erection program to meet the participants' needs with the goal of enhancing their overall work performance. Topics covered will be taken from the new structural training package with emphasis on general safe erection practices and procedures, tools and equipment, planning and scheduling, material handling, bolting up, and plumbing and aligning. Limited to Ironworker Instructor Training program participants.

IWT 217   National Welding Certification Program of North America   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 22.5 lab, 0 clinical, 0 other, 45 total contact hours

Using Miller and Smith Equipment, the participants will have the opportunity to test and inspect various National SMAW, FCAW, and GTAW welding procedures on plate and pipe. Upon successful completion of each test, the participant will receive a corresponding National Welder Certificate and identification card. GTAW and GMAW-P will be introduced on miscellaneous metals. Participants who are certified welders will learn advanced inverter technology, troubleshooting welding equipment and systems, and multi-process use of newer equipment. Limited to Ironworker Instructor Training program participants.

IWT 219   Certified Welding Inspector Recertification Course   **4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; Previously certified as a CWI and requiring a 9-year
                               recertification
30 lecture, 30 lab, 0 clinical, 0 other, 60 total contact hours

This review course is designed to prepare previously certified welding inspector for their 9-year recertification examination. A representative of the American Welding Society will administer the required section of the CWI examination to participants on the final day of the course. Limited to Ironworker Instructor Training program participants.

IWT 220   New Seismic Requirements for Structural Steel   **1.5 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 0 lab, 0 clinical, 0 other, 22.5 total contact hours

This course, presented by representatives of the Lincoln Electric Company, covers the latest seismic (earthquake) requirements for structural steel welding. The classroom and hands-on instruction focus primarily on the AWS D1.8 recommendations for FCAW welding: electrodes, qualification, design and fabrication. This course is recommended for areas with seismic requirements. Limited to Ironworker Instructor Training program participants.

IWT 223   Ornamental Wall Coverings and Glass Railing   **1.5 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
10.5 lecture, 12 lab, 0 clinical, 0 other, 22.5 total contact hours

This course will focus on types and installation of curtain wall, window wall, storefronts, entrance ways and glass railing. In addition, storage, safe handling, application of caulking and installation of glass will be taught. A portion of this course will consist of hands-on training. Limited to Ironworker Instructor Training program participants.

Journalism   JRN

JRN 111   Introduction to Journalism   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this introductory course, students begin by examining, discussing and analyzing news stories delivered in various forms, identifying fundamental elements of style, tone, content. Students progress to interviewing live sources, writing news articles, and reviewing relevant rules of grammar. Examination of interview techniques and newsroom organization is also included. This course was previously ENG 101.

JRN 210   Introduction to Copy Editing   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students practice editing copy for publications with an emphasis on newspapers and newspaper websites. Students write headlines; edit news articles for tone, style, and content; and exercise news judgment as it pertains to story placement, page layout, and audience with attention to legal and ethical standards.

JRN 216   News Writing and Reporting   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; JRN 111 minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students write news articles suitable for publication in print or electronic media. Conventions of newspaper writing are emphasized, including neutral tone, fair and balanced reporting, summary leads, feature leads, nut graphs and appropriate use of quotations. Students also examine legal and ethical concerns and may cover speeches, courts and government. Students will perform research for their stories using interviews, Internet resources and electronic databases. This course was previously ENG 216.

JRN 217   Feature Writing   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; JRN 111 minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students write articles suitable for publication as features for print, Web or other media. Human interest stories, profiles, obituaries, law and ethics, narrative technique and online reporting/media convergence are among the topics examined. Students practice research techniques as a part of each writing assignment. This course was previously ENG 217.

JRN 220   Introduction to Digital Journalism   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; JRN 111 minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students explore ways to report news and information digitally. Students use social media, digital images, and digital video along with text to report stories they gather and post on web-based blogging platforms while observing the ethical and legal conventions of professional journalism. The title of this course was previously Journalism for the Web.

Machine Tool Technology   MTT

MTT 102   Machining for Auto Applications   **2 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
20 lecture, 40 lab, 0 clinical, 0 other, 60 total contact hours

This course provides an introduction to basic machine tool operations. Much emphasis is placed on shop safety. Topics covered include: inch and metric precision measurement tools, tool identification, cutting speed calculations, drilling and tapping. Lab projects cover the basic operation of horizontal band saw, contour band saw, vertical milling machine, surface grinder, lathe and threading on lathe. Machining contours is demonstrated on a CNC machining center.

MTT 105   Machine Tool Skills Laboratory   **2 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; MTT 102 or MTT 111, minimum grade "D"
15 lecture, 30 lab, 0 clinical, 0 other, 45 total contact hours

This class is designed to give students enrolled in other courses an opportunity to use the machine shop with faculty instruction. Many classes on campus require students to build or modify parts. For example, classes such as robotics require students to design and build working manufacturing cells. Lecture, along with demonstration, will be used to make students aware of various machine tool setups. Students who want to maintain their machine tool skills can select from dozens of projects available.

MTT 111   Machine Shop Theory and Practice   **4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 2
45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

This course provides an introduction to machine tool operation. Much emphasis will be placed on shop safety. Other topics that will be covered include: basic measurement, drawings, hand tools, feeds and speeds and rotary tools. In addition to the above, students will gain valuable "hands-on" experience learning basic operations on the sawing machines, engine lathes, milling machines and grinding machines.

MTT 174   MTT Co-op Education I   **1-3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; MTT 202; consent required
0 lecture, 0 lab, 0 clinical, 120 other, 120 total contact hours

Students are placed in an approved work experience to gain skills and knowledge offered by the employer. Together with the instructor and the employer, students set up work assignments and learning objectives to connect classroom learning with career-related work experiences. Students with experience equivalent to MTT 202 may contact the instructor for permission to waive the prerequisite.

MTT 203   Advanced Machine Tool Operations   4 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6; MTH 151 and MTT 111, minimum grade "C-"
45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

This course teaches advanced machine tool skills required by industry. Topics include: carbide tooling identification and uses, threading and thread forms, cutting internal and external tapers, precision measurement, advanced layout and set-up techniques and grinding. Students will attain a higher comprehension level for set-up and tooling requirements needed for CNC programming and CAD/CAM classes.

MTT 240   Mechanical Trades   4 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6
30 lecture, 60 lab, 0 clinical, 0 other, 90 total contact hours

This course addresses mechanical fundamentals for students in the millwright and mechanical trades. Topics include safety, safe working loads for ropes and cables, structural materials/applications, types/applications of lubricants, bearings, belts, chains, sprockets, sheaves, fasteners, conveyor systems, cranes, and power lifts. Projects apply plant layout and material handling methods, manufacturing sequencing, line balancing, flow requirements, workstation layout, ergonomic and space requirements. This course contains material previously taught in MTT 140.

MTT 274   MTT Co-op Education II   1-3 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6; MTT 174; consent required
0 lecture, 0 lab, 0 clinical, 120 other, 120 total contact hours

Students are placed in an approved work experience to gain skills and knowledge offered by the employer. Together with the instructor and the employer, students set up work assignments and learning objectives to connect classroom learning with career-related work experiences.

Mathematics   MTH

MTH 034   Foundations of Numeracy   4 credits
Level I Prerequisites: Academic Reading Level 4; no minimum writing level; Academic Math Level 0, no higher than level 1
Corequisites: ACS 101
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

MTH 034 is the first course in the developmental math sequence. Students will develop their number sense and master the four basic operations. Topics of this course include addition, subtraction, multiplication, and division of; whole numbers, integers, decimals, fractions. Other topics include prime numbers, factorization, basic measurement, and inequalities. Students will also learn success strategies. Students who complete this course with a "C" or better are eligible to enroll in MTH 067.

MTH 067   Foundations of Mathematics   4 credits
Level I Prerequisites: Academic Reading Level 4; no minimum writing level; Academic Math Level 1, no higher than level 2
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This is the second of three courses in the developmental math sequence. The focus of this course is to develop students' problem-solving and basic algebra skills. Topics for this course include applications involving integers, decimals and fractions, as well as applications of percents, proportions and consumer credit, algebraic expressions, algebraic properties, algebraic operations and multi-step equation-solving. The Cartesian Coordinate system and applications of algebra are also introduced. Successful completion of this course with a minimum grade of "C" will raise your Academic Math level to 2.

MTH 097   Foundations of Algebra   **4 credits**

Level I Prerequisites: Academic Reading Level 4; no minimum writing level; Academic Math Level 2

60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This is the last of three courses in the developmental math sequence. Topics include linear and quadratic functions, polynomials and systems of linear equations. Students who complete this course are prepared for college-level mathematics and will have finished the first course in WCC's algebra sequence. Successful completion of this course with a minimum grade of "C" will raise your Academic Math level to 3.

MTH 125   Everyday College Math   **4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 2
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This course is intended to further students' mathematical knowledge of concepts and applications they might encounter in everyday adult life. Students will read and understand college-level readings of mathematical topics. Topics will include three main subject areas: advanced consumer math and formulas (mortgage interest, compound interest, loans and credit cards), Logic and Sets (sets and operations, Venn Diagrams, basic logic) and statistics (probability, measures of center and spread, the normal curve).

MTH 148   Functional Math for Elementary Teachers I   **4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 3
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This course is the first in a two-course sequence presenting the mathematical concepts and problem-solving techniques necessary for success in a teaching career at the elementary school level. It is not a course solely for math teachers; rather it provides a general mathematical background for teachers of all subjects. Topics include problem-solving, sets, numeration systems, number theory and the whole, integer and rationale number systems.

MTH 149   Functional Math for Elementary Teachers II   **4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 3; MTH 148 minimum grade "C"
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This course is the second in a two-course sequence presenting the mathematical concepts and problem-solving techniques necessary for success in a teaching career at the elementary school level. It is not a course solely for math teachers; rather it provides the general mathematical background for teachers of all subjects. Topics include probability, an introduction to statistics, introductory geometry, congruence and similarity and measurement concepts.

MTH 151   Technical Algebra   **4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 2
75 lecture, 0 lab, 0 clinical, 0 other, 75 total contact hours

This course introduces algebraic, geometric and trigonometric concepts in an applied setting and is primarily for trade and technical students. Topics, which emphasize applications, include: a review of the fundamentals of fractions, decimals and percents; terminology and applications of geometry; measurements and conversions; algebraic expressions, equations, and formulas; ratio and proportions; summary graphs and charts; and an introduction to right triangle trigonometry.

MTH 157   Geometry and Trigonometry   3 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 3 or MTH 151 minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This is a course in the measurement of geometric shapes. Topics include: general measurement principles; perimeter; area; volume; and the measurement of length and angle (in general and applied settings). A two-line scientific calculator is required for this course. See the time schedule for current brand and model. This course contains material previously taught in MTH 107 and MTH 152.

MTH 160   Basic Statistics   4 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 3
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This course provides students with a general understanding of statistical concepts dealing with the processing and interpretation of numerical information. Topics covered include describing a numerical data set, central tendency, variability, probability distributions, inference and hypothesis testing. A graphing calculator is required for this course. See the time schedule for current brand and model.

MTH 167   Math Applications for Health Science   3 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 3
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students review the mathematical and algebraic skills required to solve calculations in health-related fields. The topics, which relate to safety and ethics in the health care field, include the metric system, proportions, dimensional analysis, interpretation of medication orders, basic dosage calculations and calculations used in specialty areas.

MTH 169   Intermediate Algebra   4 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 3
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

Intermediate Algebra is the second course in the algebra sequence. The following functions will be studied: quadratic, rational, radical, logarithmic and exponential. A graphing calculator is required for this course. See the time schedule for the current brand and model. Successful completion of this course with a minimum grade of "C" will raise your Academic Math level to 4.

MTH 170   Math for Beginning Programmers   3 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 2
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students will learn the basic mathematical materials expected of a beginning programmer. Topics such as basic properties of mathematical operations, number representations, integer specialties, number bases, Boolean logic, subscripts, functions, set theory, descriptive statistics (mean, median, mode, quartiles, percentiles, range, variance, standard deviation, linear regression) and trig and log functions will be covered.

MTH 176   College Algebra   **4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 4
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This course provides the necessary background for pre-calculus. Topics include graphs of functions including transformations, function composition, variation, polynomial functions of degree two and higher, polynomial and synthetic division, roots of polynomials, complex numbers, rational functions and equations, non-linear equations and inequalities, inverse functions, exponential functions equations and models, logarithmic functions equations and models and applications. A graphing calculator is required for this course. See the time schedule for the current brand and model. Successful completion of this course with a minimum grade of "C" will raise your Academic Math level to 5. This course was formerly MTH 179.

MTH 178   General Trigonometry   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 5; MTH 176 minimum grade "C", may enroll
                                concurrently
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students receive a rigorous background in trigonometry. Topics include: trigonometric functions, inverse trigonometric functions, radian measure, trigonometric graph, identities, solutions of trigonometric equations, solution of triangles, rotation and vector triangles. A graphing calculator is required for this course. See the time schedule for the current brand and model.

MTH 180   Precalculus   **5 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 5
75 lecture, 0 lab, 0 clinical, 0 other, 75 total contact hours

This course provides the necessary background in analytic geometry, trigonometry and advanced algebraic topics for calculus. Topics include trigonometric functions, identities and graphs, the conic sections, sequences and series and the binomial theorem. A graphing calculator is recommended for this course. See the time schedule for the current brand and model. Successful completion of this course with a minimum grade of "C" will raise your Academic Math level to 7.

MTH 181   Mathematical Analysis I   **4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 4
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This course teaches the methods and applications of finite mathematics applied to social science and business. Topics covered include solutions to linear equations and inequalities, mathematics of finance, matrices, linear programming, sets, probability and statistics. A graphing calculator is required for this course. See the time schedule for current brand and model.

MTH 191   Calculus I   **5 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 7
75 lecture, 0 lab, 0 clinical, 0 other, 75 total contact hours

This is first-semester college calculus of a single variable. Topics include: limits, continuity, derivatives, applications of derivatives, elementary integration and transcendental functions. A graphing calculator is required for this course. See the time schedule for the current brand and model.

MTH 192   Calculus II   **4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; MTH 191 minimum grade "C"
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This is a second semester college calculus course of one variable. Topics include applications of integration, integration techniques, L'Hopital's Rule, improper integrals, infinite series, parametric equations and polar coordinates. A graphing calculator is required. See the time schedule for current brand and model.

MTH 197   Linear Algebra   **4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; MTH 191 minimum grade "C"
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This is an introductory college course in linear algebra. Topics include linear systems of equations, properties of vectors and matrices, determinants, vector spaces, linear transformations, eigenvalues and applications. A graphing calculator is required for this course. See the time schedule for current brand and model.

MTH 293   Calculus III   **4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; MTH 192 minimum grade "C"
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This is the third-semester college calculus course of more than one variable. Topics include geometry in the plane and in space, vector-valued functions, partial derivatives, multiple integrals and an introduction to vector calculus. To confirm transfer equivalency, consult a counselor or check the Web page of the college to which you are transferring. A graphing calculator is required for this course. See the time schedule for current brand and model.

MTH 295   Differential Equations   **4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; MTH 293 minimum grade "C"
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This is a one-semester course on solving elementary differential equations. Topics include: solving 1st order basic differential equations, solving higher order linear differential equations with constant coefficients, Laplace Transforms, solving systems of linear equations using the eigenvalue method. Successful completion of MTH 197 (Linear Algebra) is strongly recommended. A graphing calculator is required for this course. See the time schedule for current brand and model.

Motorcycle Service Technology   MST

MST 110   Motorcycle Service Technology I   **4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 60 lab, 0 clinical, 0 other, 105 total contact hours

This entry level course provides an understanding of the operation of a motorcycle service department. It will instruct the student in the proper use of hand and shop tools. The theory, operation, tolerances, and specification of basic internal combustion engines will be covered. Included in this class are the proper procedures for new vehicle set up and mileage-based maintenance and installation of accessories.

MST 120   Motorcycle Service Technology II   **4 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6; MST 110 minimum grade "C"
45 lecture, 60 lab, 0 clinical, 0 other, 105 total contact hours

Students learn to identify and explain the operational theory of motorcycle drivelines, to diagnose, service and repair primary and final drive systems, clutch assemblies, transmissions, wheels, brakes, and front and rear suspension components. They also learn the theory of frame geometry and design.

MST 130   Motorcycle Service Technology III   **4 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6; MST 120 minimum grade "C"
45 lecture, 60 lab, 0 clinical, 0 other, 105 total contact hours

This course focuses on problem-solving strategies for isolating defective components and the troubleshooting and repair of: wiring harnesses, charging systems, ignition systems and starting systems. The principles, components, operation, troubleshooting, service and repair of both carbureted and fuel-injected systems will be covered.

MST 140   Motorcycle Service Technology IV   **4 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6; MST 130, MTT102 and WAF 105, minimum grade "C"
45 lecture, 60 lab, 0 clinical, 0 other, 105 total contact hours

Through the use of manufacturer's service and parts manuals, the student learns the proper procedure for preparing complete and accurate damage repair estimates. Using a combination of classroom and hands-on skills training, students learn to diagnose, service and repair single- and multiple-cylinder engines.

MST 210   Performance Engine Technology   **4 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6; MST 140 minimum grade "C"
45 lecture, 60 lab, 0 clinical, 0 other, 105 total contact hours

The student learns to identify the theory and components of a performance engine. They also learn the advantages and disadvantages of raising the level of peak performance of an engine. The course will supply the knowledge to design and install a performance enhancement package.

MST 220   Dynamometer Operations   **4 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6; MST 140 minimum grade "C"
45 lecture, 60 lab, 0 clinical, 0 other, 105 total contact hours

Students learn to identify the components and operation of a load control dynamometer. The primary emphasis is on the student learning to use the dynamometer as a diagnostic, data acquisition, and tuning tool. The course will instruct the student in the design and application of various tuning technologies used in current custom fuel and ignition mapping. The student will develop the skills to become proficient in tuning carbureted vehicles.

MST 225   Advanced Dynamometer Tuning Systems   **4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; MST 220 minimum grade "C"
45 lecture, 60 lab, 0 clinical, 0 other, 105 total contact hours

Students will be taught the skills to operate a load control dynamometer as an advanced tuning tool. The primary emphasis is on the student learning to use the dynamometer to troubleshoot and tune fuel injection systems on motorcycles and ATV's. They will learn the application of various technologies used by both the OEM's and aftermarket companies.

MST 230   Advanced Motorcycle Fabrication   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; consent required
30 lecture, 30 lab, 0 clinical, 0 other, 60 total contact hours

This course begins the integration of the knowledge and skills acquired in the Motorcycle Service Technology programs and from coursework in Welding and Fabrication and Machine Tool Technology. Students will practice design skills including pattern development, mechanical drawing and fastener selection in the creation of a custom motorcycle frame, swing arm or billet accessory. Designed parts will be fabricated using welding, milling machine and lathe operation skills on various types of building materials including body sheet metal.

MST 235   Advanced Motorcycle Fabrication II   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; consent required
30 lecture, 30 lab, 0 clinical, 0 other, 60 total contact hours

This is the second course in advanced motorcycle fabrication. This course expands on the knowledge acquired in Motorcycle Service Technology, Welding and Fabrication and in Machine Tool Technology. Areas of study will include all aspects of the complete design and fabrication of a custom motorcycle.

Music   MUS

MUS 103   WCC Jazz Orchestra   **2 credits**

Level I Prerequisites: No Basic Skills
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

WCC Jazz Orchestra is a performance-oriented course for woodwinds, brass, percussion and string instruments, as well as electronic keyboards and vocalists. There is an emphasis on musical phrasing, blending, style and improvisation. This course will focus on melodic, harmonic and rhythmic skills necessary for performing in a big-band setting. The class will perform in the community and on campus. The lessons focusing on musical skills vary depending on the musical selections, which change each semester; therefore, this course may be completed for credit up to a maximum of four times.

MUS 104   Top 40 Combo   **2 credits**

Level I Prerequisites: No Basic Skills
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

This class will put emphasis on performing the type of music that is popular with dance, wedding receptions, and nightclub audiences. It will examine the different elements that make songs popular and more appropriate for dancing. The instrumentation in this type of combo will consist of lead and rhythm guitars, electric bass guitar, piano and synthesizers, drums, saxophone, trumpet and vocals. This class will perform in different venues throughout the community.

MUS 105   Basic Combo and Improvisation   **2 credits**
Level I Prerequisites: No Basic Skills
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

This is a basic performance skills class for instrumental and vocal solo or small group expression. Students learn basic improvisation and listening skills, how to express their original ideas through the acquisition of chord and scale relationships, and communication and group interaction skills. Students must demonstrate basic competency on their instruments.

MUS 106   Jazz Combo and Improvisation   **2 credits**
Level I Prerequisites: No Basic Skills
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

This course is designed for the musician with some degree of competency to gain experience and skill in performance and improvisation of different styles of jazz music. This is a performance group which offers concerts at WCC and in the community-at-large.

MUS 112   Washtenaw Community Concert Band   **2 credits**
Level I Prerequisites: No Basic Skills; consent required
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

The Washtenaw Community Concert Band is a performance-oriented course with an emphasis on learning and performing conventional concert band music. It will focus on melodic, harmonic and rhythmic skills necessary for high-quality performance in a concert band setting. The class will be combined with players from the community for rehearsals and will perform in the community and on campus. This course may be completed for credit up to a maximum of three times.

MUS 122   Washtenaw Community Concert Band II   **2 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6; No Basic Skills; consent required
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

 Washtenaw Community Concert Band II is a performance-oriented course with an emphasis on learning and performing conventional concert band music at a more advanced level. It will focus on advanced melodic, harmonic and rhythmic skills necessary for high-quality performance in a concert band setting. The class will be combined with players from the community for rehearsals and will perform in the community and on campus. The lessons focused on musical skills vary based on the musical selections, which change each semester; therefore, this course may be completed for credit up to a maximum of three times.

MUS 133   Beginning Guitar   **2 credits**
Level I Prerequisites: No Basic Skills
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

This course is a beginning guitar class focusing on playing chord changes, fingerstyle techniques and beginning and intermediate chord progressions found in popular and folk music. This course was previously MUS 233.

MUS 134   Intermediate Guitar   **2 credits**

Level I Prerequisites: No Basic Skills; MUS 133 minimum grade "C"
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

This class covers advanced chord formations (Major 7th, Minor 7th, and Dominant 7th chords) and how to apply them in a song. It also covers Major and Minor Scales in every key and how to use them in songs by playing the melody. Advanced stages of the class will cover improvisation. Musical expression will also become an important factor. The students will be introduced to the term "the art of self expression." Students with experience equivalent to MUS 133 may contact the instructor for permission to waive the MUS prerequisite. This course was previously MUS 236.

MUS 136   Gospel Chorus   **2 credits**

Level I Prerequisites: No Basic Skills
0 lecture, 0 lab, 0 clinical, 30 other, 30 total contact hours

This is a solo and group performance class in the African-American tradition of gospel music. Techniques in vocal production, breathing, rehearsal, improvisation, and gospel music vocal arranging, as well as a brief history of gospel music will be covered. The course will include final performances each semester. This course may be completed for credit up to a maximum of three times.

MUS 140   Music Theory I   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course is designed to give prospective musicians (hobby to professional) a basic foundation in the reading, writing, and understanding of musical notation. Students will explore the basic concepts of musical form, rhythm, meter, pitch notation, and creative use of music as it relates to their individual goals. Students should have some prior experience in performing with an instrument, creating music, or have a desire to perform or study music further.

MUS 142   Music Theory II   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; MUS 140
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course is designed to provide musicians (hobby to professional) a more advanced knowledge of music composition and performance vocabulary. Students will work on ear training, music notation, and analysis of creative composition of music techniques. Students will learn to make career and music theory homework plans and to implement these plans with instructor supervision.

MUS 146   Songwriting I   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

For the prospective song writer, this class is designed to enhance the various phases of songwriting: observation, lyric writing, musical accompaniment and collaboration skills. Students collaborate using their talents to produce songs and also become acquainted with musical styles through recordings and demonstrations. Students will be expected to write or collaborate with others to write a song at least twice in the semester. The title of this course was previously Songwriting and Creative Improvisation.

MUS 147   Entertainment Law   **2 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

This is a course for the serious music student and professional musician covering basic agreements, contracts, royalties, copyrights and other legal aspects in the music industry. Students who intend to perform for an audience, publish or record need this important information.

MUS 154   Functional Piano I   **2 credits**

Level I Prerequisites: Academic Reading Level 4; Academic Writing Level 3
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

This class is designed for those who wish to learn the fundamentals of playing the piano, including the ability to read and execute keyboard music harmonically and melodically. The course covers basic musicianship, piano technique fundamentals, elementary keyboard harmony, sight-reading, pedal technique and keyboard facility for use in support of other music classes. The course also offers an introduction to how the piano works, its development, and composers and pianists in various styles. This course was previously MUS 210.

MUS 155   Functional Piano II   **2 credits**

Level I Prerequisites: Academic Reading Level 4; Academic Writing Level 3; MUS 154 minimum grade "C"
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

This course is a continuation of functional piano, providing studies beyond the beginning stage. It focuses more on individual development in terms of technique, expression, and performance, as well as providing further keyboard skills, historical and theoretical background. This course was previously MUS 211.

MUS 162   Music Sequencing and Programming   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This class demonstrates how to compose songs using a MIDI keyboard workstation and focuses on making the recording process a one-person operation. The student will record and edit original compositions using multiple tracks and will quantize rhythms and simulate instruments such as piano, drums, guitar, and bass guitar. The class will include string and horn arranging.

MUS 165   Club DJ Mixing and Performance   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students will be introduced to the skills and abilities needed to become a professional DJ. These will include hosting a party, involving the audience, blending songs together and using equipment such as turntables, touch response platters, P.A. systems and lights. Students will compile a song library and develop a play list for specific occasions. Students will develop strategies for booking engagements and promoting their work.

MUS 170   Computer Applications in Music   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course uses computer applications to provide basic instruction in the theory of computer-aided composition and sequencing. Terminology and theory in MIDI, digital audio, keyboard synthesis, and sequencing as are covered. Students will complete individual and group projects.

MUS 175   Audio Recording Technology I   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course is designed to provide students with the fundamentals necessary for a career-oriented study in creative audio recording. Audio-visual and hands-on experience (professional recording studio access) is provided, as is lecture and studio experience on multimedia recording and mixing techniques.

MUS 180   Music Appreciation: Our Musical World   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This is an active participation course that will use music as a means for learning about the world around us. The course emphasizes the potential creative, critical-thinking and socio-cultural factors as they may best enhance the students' lives and careers. Many of the world's musical styles and geographic regions are considered.

MUS 185   Western Music History Survey   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This is an introductory music history course covering the major stylistic periods in the development of music in Western civilization. Students will develop skills to listen to music critically and place it in historical context, and will study the fundamental elements of music necessary for focused listening. Students will be introduced to representative composers, works and styles from a variety of periods from early music through the present.

MUS 204   Voice I   3 credits

Level I Prerequisites: No Basic Skills
0 lecture, 0 lab, 0 clinical, 45 other, 45 total contact hours

This course is a beginning course in voice, enabling the student to effectively sing with proper technique as well as perform beginning repertoire in class. The course covers fundamentals of vocal technique, basic anatomy and physiology of the voice, basic music terminology, and exposure to various vocal styles and genres. A significant amount of class time is spent on individual performance in a studio class setting.

MUS 205   Voice II   **3 credits**

Level I Prerequisites: No Basic Skills; MUS 204 minimum grade "C"
0 lecture, 0 lab, 0 clinical, 45 other, 45 total contact hours

This course is a continuation of MUS 204, providing studies beyond the beginning stage. It focuses more on individual development in terms of technique, repertoire, and performance. The course also further develops the student's knowledge of theory, sightsinging and basic musicianship as they apply to the singer. Students with experience equivalent to MUS 204 may contact the instructor for permission to waive the prerequisite.

MUS 209   Musical Theatre Song Performance Seminar   **2 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; MUS 204
0 lecture, 0 lab, 0 clinical, 30 other, 30 total contact hours

This course is a studio/seminar on song performance in the musical theatre genre, and is intended for students with background in voice. Vocal technique, diction, performance techniques, and development of repertoire are emphasized in a studio class setting. Students perform frequently in class and receive coaching from the instructor as well as feedback from their classmates. It is suggested that this course be taken the first time in conjunction with DRA 209, Acting for Musical Theatre. Students with experience equivalent to MUS 204 may contact the instructor for permission to waive the prerequisite. This course may be completed for credit up to a maximum of three times.

MUS 223   WCC Jazz Orchestra II   **2 credits**

Level I Prerequisites: No Basic Skills
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

This is an advanced performance-oriented course for woodwinds, brass, percussion and string instruments, as well as electronic keyboards and vocalists. There is an emphasis on more advanced musical phrasing, blending, style and improvisation. This course will focus on advanced melodic, harmonic and rhythmic skills necessary for performing in a big-band setting. The class will perform in the community and on campus. The lessons focusing on musical skills vary depending on the musical selections, which change each semester; therefore, this course may be completed for credit up to a maximum of three times.

MUS 237   Finger-Style Blues and Slide Guitar   **2 credits**

Level I Prerequisites: No Basic Skills; MUS 133 and MUS 134, minimum grade "C"
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

This course draws from the history of the musicians from the Delta regions of Mississippi in the 1930's to the present. It will focus on the finger-picking techniques and the alternate tunings used by the great blues artists who inspired the blues tradition from Robert Johnson to Stevie Ray Vaughn. Students will execute various right hand techniques, such as alternating bass rhythms, shuffle bass rhythms, and Delta strumming rhythms. Left hand techniques will include advanced chord formations associated with blues theory, chord formations associated with the alternate tunings as well as techniques associated with the use of bottleneck slide. The student will also illustrate and explore blues theory and progressions.

MUS 239   Jazz Guitar I   **3 credits**

Level I Prerequisites: No Basic Skills; MUS 134 minimum grade "B"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This class will focus on the styling of jazz guitar greats like Wes Montgomery, Kenny Burrell and Joe Pass. It will examine chord melody solos, the melodic content and playing with octaves. Through this study, the student will learn the importance of dynamics and sensitivity. The class will give insight into improvisational playing of chords and walking bass lines simultaneously.

MUS 240   Jazz Guitar II   3 credits

Level I Prerequisites: No Basic Skills; MUS 239 minimum grade "B"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This class will further explore the styling of jazz guitar greats such as Wes Montgomery, Kenny Burrell and Joe Pass. It will examine chord melody solos, the melodic content and playing with octaves. Through this study the student will learn the importance of dynamics and sensitivity. The class will give insight into playing chords and walking bass lines simultaneously.

MUS 245   Music Producing and Arranging   2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; MUS 175 minimum grade "C"
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

This class covers string and horn arranging with emphasis on arranging a rhythm section (guitar, bass guitar, drums, piano and keyboards). Also covered, is the role of the producer and the skills necessary for creating a finished recording product for the commercial market. The student should have some knowledge of general music theory.

MUS 247   Mixing and Mastering   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; MUS 170 and MUS 275, minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students will experience mixing and mastering music according to record industry standards. Students will use signal processing to enhance music to achieve the desired end product. They will adjust frequencies of multiple songs to master a CD that is radio-ready.

MUS 248   Sound Reinforcement for Stage   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This class covers all aspects of theatrical amplification from the spoken word to musical performances. It will demonstrate how to equalize sound in order to amplify it. The class emphasizes the importance of monitoring the stage and mixing console while making volume and equalization adjustments for diverse musical and theatrical events.

MUS 251   Classical Piano I   3 credits

Level I Prerequisites: No Basic Skills; MUS 154 or MUS 155, minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course is designed to introduce students to proper techniques of classical piano. Techniques include hand position, tone, dynamics, phrasing, and meter. The student will also learn music theory (form, chord structures, voice leading) and history as it pertains to the music. Short preludes and etudes and other appropriate repertoire will be introduced to further develop technique and reinforce an understanding of classical style. The student will have an opportunity to study works of master classical composers such as Bach, Beethoven, Mozart and Chopin.

MUS 252   Classical Piano II   3 credits

Level I Prerequisites: No Basic Skills; MUS 251 minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course is a continuation of the Classical Piano I course and is designed to move the student to the next level of study. The student will move on to advanced study of the classical piano focusing on advanced techniques for the left and right hand, tone, dynamics, phrasing and meter. The student will study works of master classical composers such as Beethoven, Mozart, J.S. Bach, Tchaikovsky, Chopin and others.

MUS 275   Audio Recording Technology II   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; MUS 175
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This is a career-oriented course for advanced audio technology recording. Students apply basic theory and recording skills to progressive recording of solo instrumental, small group and finally multi-track large ensembles. Students are assigned projects to record both students and professional groups within the college or externally.

MUS 280   Voice III - Classical Voice   3 credits

Level I Prerequisites: No Basic Skills; MUS 204 and MUS 205, minimum grade "C+"; MUS 205 may enroll concurrently
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course will expose students to the techniques and fundamental principles involved in the preparation and study of classical vocal repertoire. The class will assume knowledge of vocal production and stage presence from Voice I and Voice II. The curriculum will include the provision of theoretical vocal and musical concepts, as well as the application of classical voice principles through studio and/or outside performances.

MUS 285   Self Management for Working Artists   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students will learn how to market themselves or others in the music industry. Students will focus on developing interpersonal skills; preparing a portfolio; booking performances; preparing, analyzing and negotiating contracts; and determining the monetary value of the work of a musician. Students will explore how to manage their business while creating a multi-faceted career. Students may not earn credit in both ART 285 and MUS 285.

Numerical Control   NCT

NCT 101   Introduction to Computerized Machining (CNC) - I   2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
30 lecture, 30 lab, 0 clinical, 0 other, 60 total contact hours

This is the first course of the numerical control series. Students are exposed to various aspects of automated machining centers used in automated manufacturing. Studies include an introduction to controllers, fundamentals of set-up and operation, programming CNC controllers, CAD CAM software and simulation software. This course contains material previously taught in NCT 112.

NCT 110   Introduction to Computerized Machining (CNC) - II   **2 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; NCT 101 minimum grade "C"
30 lecture, 30 lab, 0 clinical, 0 other, 60 total contact hours

This course is a continuation of NCT 101. This class focuses on the set-up and operation of CNC mills and lathes in the laboratory. Different parts will be machined, to specification, though variations of set-up and interactions with the machine tool controllers. Students will be able to operate the CNC vertical mills and CNC lathes in the lab after successful completion of this class. This class prepares students for the manual programming and advanced programming classes where students will be required to program, set-up and cut various parts. This course contains material previously taught in NCT 112.

NCT 121   Manual Programming and NC Tool Operation   **4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; MTT 111, NCT 101, and NCT 110, minimum grade "C-"; NCT 101 and NCT 110, may enroll concurrently
30 lecture, 60 lab, 0 clinical, 0 other, 90 total contact hours

This is the first in a two-course study of manual programming of CNC milling and turning centers. Students experience the entire process of part manufacturing by processing working drawings of sample parts, writing and editing of programs, set up and operation of CNC machine tools, and inspection of the finished products. Feeds and speeds, fixed cycles, program editing, set up procedures, and tape preparation are major topics presented. Laboratory time is required outside of class time. Students with experience equivalent to NCT 101 and NCT 110 may contact the instructor for permission to waive the prerequisites.

NCT 174   NCT Co-op Education I   **1-3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; NCT 221; consent required
0 lecture, 0 lab, 0 clinical, 120 other, 120 total contact hours

Students are placed in an approved industrial work experience to gain skills and knowledge offered by the employer. Together with the instructor and employer, students set up work assignments and learning objectives to connect classroom learning with career-related work experience. This is the first of two co-op courses.

NCT 221   Advanced Manual Programming and NC Tool Operation   **4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; NCT 121 minimum grade "C-"
30 lecture, 60 lab, 0 clinical, 0 other, 90 total contact hours

This is the second of a two-course study of manual programming and CNC Machine Tool Operation. Complex cutter path generation, cutter compensation, repetitive programming, multi-quadrant circular interpolation, three axis interpolation, threading, and other advanced programming techniques are practiced. Geometry creation using CAD/CAM software will be presented and used in this class. The class format is similar to that of NCT 121. Students with experience equivalent to NCT 121 may contact the instructor for permission to waive the prerequisite.

NCT 249   CAD/CAM CNC Programming   **4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; NCT 221 minimum grade "C-", may enroll concurrently
45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

Students learn to use CAD/CAM software to design parts and generate CNC machine tool programs for part manufacture. Students practice the input of geometry as the basis for tool path generation. Both 2D and 3D wireframe geometry are practiced. Various methods of surface creation are presented and practiced. CNC machine tool programs are created for the manufacture of parts within the software. Drilling pocketing and contour milling are typical 2D machining applications presented. Students are provided time in the CNC machine tool laboratory.

NCT 274   NCT Co-op II   **1-3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; NCT 174; consent required
0 lecture, 0 lab, 0 clinical, 120 other, 120 total contact hours

Students are placed in an approved industrial work experience to gain skills and knowledge offered by the employer. Together with the instructor and employer, students set up work assignments and learning objectives to connect classroom learning with career-related work experience. This is the second of two possible co-op courses.

Nursing   NUR

NUR 039   NCLEX-RN Preparation   **2 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; NUR 231 and NUR 283, minimum grade "C+", both courses may enroll concurrently
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

This course assists nursing program graduates in preparing for the NCLEX-RN (National Council Licensure Examination for RNs). Emphasis is placed on reviewing learned materials and on taking national comprehensive examinations. Departmental approval is needed if not a graduate of WCC's APNURS program. Grading uses the satisfactory/unsatisfactory system.

NUR 102   Fundamentals of Nursing   **2 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to Registered Nursing (APNURS) or Nursing Transfer program (APNURE); BIO 147 or BIO 237 minimum grade "C" (APNURS students); BIO 237 minimum grade "B" (APNURE students); BIO 212 and ENG 111; MTH 160 or MTH 167; COM 101 or COM 102 or COM 200; minimum grade "C" for BIO 212, COM, ENG and MTH courses
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

This course provides an introduction to nursing and the WCC nursing program. Foundational principles are explored for providing a safe and effective care environment, promoting health, maintaining psychosocial integrity and promoting physiological integrity. The nursing process and core components will be introduced as organizing frameworks for the nursing program. This course creates a foundation of evidenced-based nursing knowledge for the medical-surgical nursing courses and builds on knowledge gained in prerequisite courses. This course contains material previously taught in NUR 100.

NUR 106   Fundamentals of Nursing - Lab and Clinical Practice   **4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; NUR 102 minimum grade "C+", may enroll concurrently
0 lecture, 120 lab, 60 clinical, 0 other, 180 total contact hours

In this course, students learn basic nursing procedures and rationales through lab discussion, lab practice, and clinical practice. Using the nursing process and core components as organizing frameworks, nursing skills are developed that provide a safe and effective care environment, promote health, maintain and promote psychosocial and physiological integrity. The student must successfully complete the lab discussion and lab skills check-outs before progressing into the clinical component, which takes place in an extended care setting. Pre-clinical assessment time is required prior to and outside of the scheduled clinical hours. This course contains material previously taught in NUR 100 and NUR 103.

NUR 115   Pharmacology   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to Registered Nursing (APNURS) or Nursing Transfer (APNURE) program; BIO 147, BIO 212; MTH 160 (APNURE) or MTH 167 (APNURS), minimum grade "C" in all courses
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course includes basic principles of pharmacology and major drug classifications using a body systems approach and the nursing process. Pharmacology builds on previous knowledge of Pathophysiology and drug dosage calculation. General mechanisms of drug action, clinical indications for use, common adverse reactions, general nursing implications and significant drug interactions are discussed. This is a required course in the WCC Nursing Programs, but may also be taken for transfer into second career BSN programs with consent of the instructor after submission of required documentation.

NUR 122   Nursing as a Societal and Interpersonal Profession   **4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to Nursing Transfer (APNURE) program; consent required

60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This course explores and introduces the scope of the nursing profession, with emphasis on the societal mandate for nursing, legal parameters of practice, critical thinking and interpersonal relationships and communication. Students will begin to develop the self as nurse. Possible career trajectories will be explored through interaction with faculty mentors and the development of a nursing portfolio.

NUR 123   Medical-Surgical Nursing I   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; NUR 102 and NUR 115, minimum grade "C+"; NUR 106 with grade "P"

45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students use the nursing process in the care of adults and their families during health and illness. Evidenced-based principles of nursing care for adults experiencing and adapting to health deviations in the following core areas are covered: acid-base imbalances, cardiovascular, respiratory, renal, endocrine, cancer, and hematology. This course builds on knowledge gained in prerequisite courses and is the first of three medical-surgical nursing courses. The title of this course was previously Acute Care Nursing I.

NUR 124   Medical-Surgical Nursing I - Clinical Practice   **2 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; NUR 123 minimum grade "C+", may enroll concurrently

0 lecture, 15 lab, 75 clinical, 0 other, 90 total contact hours

This medical-surgical clinical experience builds on knowledge and basic skills from prerequisite courses. The lab component covers advanced nursing skills associated with the care of acutely ill adults. In the clinical component, the student begins to develop competency with time management and prioritization of patient care, while gaining an increased proficiency in assessment skills and medication administration. Using the nursing process, students learn to care for one (1) patient with moderately complex medical-surgical needs in the acute care setting. Pre-clinical assessment time is required prior to and outside of the scheduled clinical hours. The title of this course was previously Acute Care Nursing I - Clinical Practice.

NUR 130   Health Promotion and Risk Reduction   **4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6;Admission to Nursing Transfer (APNURE) program and NUR 122 minimum grade "C"

60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students gain an understanding of the concepts of health, healthy behavior, health promotion, levels of prevention, diversity and risk; factors that influence health and healthy lifestyle behaviors; basic dynamics of behavioral change; and substantive content in nutrition, physical activity and psychological well-being. Theoretical and empirical support for promoting health and reducing risk behaviors are examined as a basis for understanding ways that diverse individuals can positively influence their own health and wellness. The role of professional nursing in promoting health behavior is examined. Using substantive content, exemplar behaviors of nutrition, physical activity and coping and adaptive behaviors will be examined from the student's perspective to gain an understanding of their contribution to health and wellness. Underlying dynamics, such as self-efficacy and resilience, will be examined in the context of the theoretical and empirical literature and standards for the nursing profession. Students will examine potential strategies for influencing health behavior change.

NUR 131   Nursing of the Childbearing Family   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; NUR 102 and NUR 115, minimum grade "C+"; NUR 106 with grade "P"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students use the nursing process to understand basic nursing care of the family during the childbearing process, including the antepartum, intrapartum, postpartum and normal newborn period. Topics concerning deviations from the normal maternity and newborn experience will be addressed. Perioperative nursing topics as applied to the childbearing family will also be included. This course builds on knowledge previously gained in prerequisite courses.

NUR 132   Nursing of the Childbearing Family - Clinical Practice   2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; NUR 131 minimum grade "C+", may enroll concurrently
0 lecture, 15 lab, 75 clinical, 0 other, 90 total contact hours

Students use the nursing process to provide care for the childbearing family within the lab and hospital settings. The focus of this course is to develop the students' ability to apply knowledge gained in Nursing of the Childbearing Family (NUR 131) to the planning, implementation, and evaluation of care for the antepartum, intrapartum, postpartum woman, her newborn, and family. Care of the perioperative patient is also included.

NUR 222   Health Assessment Throughout the Lifespan   4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; NUR 102 minimum grade "C"; NUR 106 with grade "P"; both courses may enroll concurrently
45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

This course provides the beginning knowledge needed to assess the health status of individuals from infancy through old age, including physical, developmental, psychological, cultural and spiritual dimensions. The laboratory experience, focused on the adult client, provides students the opportunity for skill acquisition in history taking, assessment skills and documentation of findings. Individuals holding an RN or LPN may request an override of the course prerequisites.

NUR 223   Medical-Surgical Nursing II   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; NUR 123 and NUR 131, minimum grade "C+"; and NUR 124 and NUR 132, with grade "P"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This is the second course of the three-part medical-surgical nursing sequence that uses the nursing process to understand the care of adults and their families during health and illness. Evidence-based principles of nursing care for adults experiencing and adapting to health deviations in the following areas are covered: gastrointestinal, integumentary, nervous, musculoskeletal, reproductive, and immune. This course builds on fundamental and core knowledge gained in prerequisite courses. The title of this course was previously Acute Care Nursing II.

NUR 224   Medical-Surgical Nursing II - Clinical Practice   2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; NUR 223 minimum grade "C+", may enroll concurrently
0 lecture, 15 lab, 75 clinical, 0 other, 90 total contact hours

This medical-surgical clinical experience builds on knowledge and skills from previous courses, with emphasis on progressive development of technical skills, time management and prioritization of patient care. Using the nursing process, while applying evidence-based principles, students learn to care for two (2) patients with moderately complex medical-surgical needs in the lab and acute care settings. Pre-clinical assessment time is required prior to and outside of the scheduled clinical hours. The title of this course was previously Acute Care Nursing II - Clincial Practice.

NUR 231   Nursing of Children   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; NUR 223 and NUR 255, minimum grade "C+"; and NUR 224 and NUR 256, with grade "P"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students use the nursing process to focus on the care of children and their families during health and illness. Concepts learned in the previous semesters are applied to develop nursing interventions to care for this population. Principles of nursing care for children of all age groups experiencing health deviations and their adaptation to the stressors of hospitalization are addressed. Promoting health and fostering normal growth and development are emphasized.

NUR 232   Nursing of Children - Clinical Practice   2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; NUR 231 minimum grade "C+", may enroll concurrently
0 lecture, 15 lab, 75 clinical, 0 other, 90 total contact hours

In this course, students use the nursing process to focus on care of hospitalized children and support of their families in the acute care setting. Students focus on incorporating growth and development assessment, as well as response to illness, into the development of nursing interventions appropriate for the specific child and family. Opportunities for interaction with the well child are provided. Pre-clinical assessment time is required prior to and outside of scheduled clinical hours.

NUR 255   Mental Health Nursing   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; NUR 123 and NUR 131, minimum grade "C+"; NUR 124 and NUR 132, with grade "P"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course uses the nursing process to understand basic mental health nursing care for selected individuals in the hospital and community. The central focus is to help the student become more sensitive to human behavior and to act in a therapeutic manner. Disturbed patterns of coping, prevention of mental illness, and maintenance and restoration of mental health are discussed. This course builds upon knowledge gained in prerequisite courses.

NUR 256   Mental Health Nursing - Clinical Practice   2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; PSY 100 minimum grade "C" and NUR 255 minimum grade "C+", may enroll concurrently in both courses

0 lecture, 15 lab, 75 clinical, 0 other, 90 total contact hours

This course uses the nursing process to apply mental health nursing concepts for individuals and families in hospital and community settings. Students gain experience with current methods of prevention, maintenance and treatment when caring for at least two (2) moderately complex individuals with disturbed patterns of coping. Pre-clinical assessment time is required prior to and/or outside of the scheduled clinical hours.

NUR 283   Medical-Surgical Nursing III   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; NUR 223 and NUR 255, minimum grade "C+"; NUR 224 and NUR 256, with grade "P"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this third medical-surgical nursing course, the nursing process is used to understand the care of patients with moderately complex, multi-system needs and builds upon the principles of medical-surgical nursing. Additionally, this course will focus on prioritization and management of care, and evidence-based practice (EBP) across the health continuum. This course builds on knowledge gained in prerequisite courses. This course contains material previously taught in NUR 271 and NUR 281.

NUR 284   Medical-Surgical Nursing III - Clinical Practice   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; NUR 223 and NUR 255, minimum grade "C+"; NUR 224 and NUR 256, with grade "P"

0 lecture, 45 lab, 90 clinical, 0 other, 135 total contact hours

This capstone medical-surgical clinical experience is intended to transition students into the role of a professional nurse, which includes the role of delegator and team leader. Using the nursing process, while integrating evidence-based principles, students manage care for three (3) patients with moderately complex medical-surgical needs in the lab/workshop and acute care settings. Experience is provided for each student to function collaboratively with members of the health care team. This course contains material previously taught in NUR 272 and NUR 282.

Pharmacy Technology   **PHT**

PHT 100   Introduction to Pharmacy and Health Care Systems   **4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to Pharmacy Technology program; HSC 101 minimum grade "C", may enroll concurrently
Corequisites: PHT 103 and PHT 145
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This course introduces students to our healthcare system and various pharmacy practice settings. The technician's role of assisting the pharmacist, maintaining the pharmacy and controlling inventory is emphasized. Students learn drug information skills, computerized pharmacy business practices and the application of the HIPPA. Discussion includes legal and ethical responsibilities and the importance of pharmaceutical organizations for the advancement of the pharmacy technician profession.

PHT 101   Pharmacology for Pharmacy Technicians   **4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; PHT 100, PHT 103 and PHT 145, minimum grade "C"
Corequisites: PHT 198
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

Students learn the purposes, actions, side effects, precautions and significant interactions of major drug classes with special attention on dosage forms and commonly used drug names. The student learns to describe the use of these agents in the management of disease states and their effects on body systems.

PHT 103   Pharmaceutical Calculations   **2 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to Pharmacy Technology program
Corequisites: PHT 100 and PHT 145
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

Applications of pharmaceutical dosage calculation are presented in this course. Accuracy of calculations is stressed to assure that the patient receives the correct dose. This course prepares students for second semester laboratory and clinical course work.

PHT 106   Introduction to Pharmacy Technology   **1 credit**

Level I Prerequisites: Academic Reading and Writing Levels of 6
15 lecture, 0 lab, 0 clinical, 0 other, 15 total contact hours

The course examines the role of the pharmacy technician in various pharmacy settings. It provides an overview of the educational requirements, the state law regarding delivery of pharmacy technician services, the role of the pharmacy technician as a member of the health care team, and the career opportunities for pharmacy technicians.

PHT 145   Prescription Processing and Compounding   **2 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to Pharmacy Technology program; ENG 111 or BIO 101 or higher BIO course; MTH 167 or MTH 169 or any math level 4 course or higher; minimum grade "C" in all courses
Corequisites: PHT 100 and PHT 103
0 lecture, 90 lab, 0 clinical, 0 other, 90 total contact hours

In this course, students will be introduced to the pharmacy technician's role in the operation of a retail and hospital pharmacy. Students learn the generic and name-brands for the most dispensed medications and participate in practical exercises pertaining to prescription processing. In addition, students will gain hands-on experience in sterile and non-sterile compound product preparation. Emphasis is on aseptic technique and parenteral product preparation where students develop skills in the manipulation of parenteral drug products. This course contains material previously taught in PHT 140 and PHT 150.

PHT 174   PHT Co-op Education I   **1-3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; PHT 100, PHT 101, PHT 103, PHT 145 and PHT 198; consent required
0 lecture, 0 lab, 0 clinical, 120 other, 120 total contact hours

In this course, students gain skills from a new experience in an approved, compensated position related to their chosen field of study. Together with the instructor and employer, students set up work assignments and learning objectives to connect classroom learning with career-related work experience. This is the first of two possible co-op experiences courses.

PHT 198   Pharmacy Experience   **4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; PHT 100, PHT 103 and PHT 145, minimum grade "C"
Corequisites: PHT 101
0 lecture, 15 lab, 320 clinical, 0 other, 335 total contact hours

Skills attained in the first semester are applied in various pharmacy practice settings. All experience is under the supervision of a registered pharmacist. This class consists of a scheduled orientation and lecture component that guides the student for the clinical experience. During clinical experience, students will complete a minimum of 320 hours of clinical pharmacy practice as scheduled with the instructor and clinical site. Clinical is frequently offered as three full days per week. Expectations of clinical practice are available on the Pharmacy Technology page of the WCC website. This course is graded on a pass/no pass grading system.

PHT 274   PHT Co-op Education II   **1-3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; PHT 100, PHT 101, PHT 103, PHT 145, PHT 174 and PHT 198; consent required
0 lecture, 0 lab, 0 clinical, 120 other, 120 total contact hours

In this course, the student gains skills from a new experience in an approved, compensated position related to the chosen field of study. Together with the instructor and employer, students set up work assignments and learning objectives to connect classroom learning with career-related work experience. This is the second of two possible co-op experiences.

Philosophy   PHL

PHL 101   Introduction to Philosophy   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course will examine the discipline of philosophy from a topical perspective. Major figures and concepts in this discipline will be studied in the context of central problems or issues in the history of philosophy. Issues or topics to be studied may include: the meaning of life, freewill and determinism, the mind-body problem, moral realism v. moral relativism, moral theory or the nature of moral judgment, metaphysics or the study of reality, epistemology or the study of knowledge, the question of the existence of God or ultimate reality as well as the rationality of religious belief.

PHL 123   Critical Thinking   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course is designed to provide and foster an environment within which students can learn the basic principles of reasoning at the introductory level, and how to use these principles in informal discourse and argumentation. Although students will be introduced to some basic deductive (formal) argument forms, the focus of the course will be on inductive (informal) argumentation, since inductive reasoning is the form of argumentation that is most prevalent in our contemporary discourses, including philosophical, political, legal, ethical and religious discourse. Consequently, the student, by learning the principles of inductive argumentation, can learn how to think and argue in critically appropriate and successful ways about important topics and themes.

PHL 200   Existentialism   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

Does life have meaning? Can values exist if God does not? This course considers the works of central existentialist figures such as Kierkegaard, Nietzsche, Sartre and Camus as well as related literary works. It addresses such themes as authentic existence, freedom, nihilism, meaning, subjectivity and values. The course is both an introduction to this body of work and an attempt to raise individual awareness of the human condition within which our existence takes place.

PHL 205   Ethics   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this introductory ethics course, students are introduced to at least four of the main classical ethical theories within the Western tradition: Ethical Relativism, Virtue Ethics, Deontological (Duty) Ethics, and Utilitarianism. Additional theories and approaches may be covered, such as Feminist Ethics, Moral Egoism, or Eastern Ethical Theories. Students will apply the classical ethical theories to make moral decisions about concrete moral issues.

PHL 240   Social-Political Philosophy   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course is an introductory social-political philosophy course, within which students shall be introduced to various classical and contemporary social-political philosophies and the conceptions of human nature that underlie them. The following movements will be discussed: Political Naturalism, Social Contract Theory, Utilitarianism, Marxism, Contemporary Political Liberalism, and Feminist Political Theory.

PHL 244   Ethical and Legal Issues in Health Care   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course provides an introduction to issues arising from the application of philosophical ethics or moral theory to the health care context. Different models of ethical decision-making will be used to examine current issues in health care. The course also provides an overview of legal theory and responsibility as it applies to the health care context with an emphasis placed on professional negligence. Topics to be discussed may include: patient's rights, informed consent, confidentiality, medical research or experimentation, genetics, treatment of impaired newborns, end of life care, HIV/AIDS and moral/legal responsibilities toward colleagues.

PHL 245   Philosophy of Religion   3 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this introductory philosophy of religion course, students are introduced to various forms of Theism, Atheism and Agnosticism. The primary emphasis will be on a critical examination of their theoretical-philosophical justifications and the philosophical problems and answers that arise therefrom.

PHL 250   Logic   3 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course offers an introduction to the discipline of philosophical logic. Emphasis will be placed on the distinction between deductive/formal reasoning and inductive/informal reasoning. With regard to the former, the course will examine different methods for the evaluation of deductive/formal arguments or reasoning. With regards to the latter, the course will again explore methods of evaluation, highlighting common mistakes in informal or everyday reasoning.

Photography   PHO

PHO 090   General Photography   2 credits
Level I Prerequisites: Academic Reading Level 4 or REA 070 or REA 071, may enroll concurrently; Academic Writing Level 6 or ENG 090 or ENG 091, may enroll concurrently
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This is a course for students wishing to understand basic photography and its processes. Primary emphasis is on understanding and using the camera and related equipment, picture taking, composition, lighting, film, etc. Students should own or have the use of some type of camera. No darkroom work is included in this course.

PHO 101   Photography on Location   3 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6; PHO 111 minimum grade "C-"
30 lecture, 30 lab, 0 clinical, 0 other, 60 total contact hours

This course studies methods and visual approaches of documenting and interpreting various locations with the camera. Emphasis is placed on making photographs on location and reviewing the results both on location and in critique. Students will learn to prepare equipment for location photography, review results on site and make photographs under special conditions. Locations and meeting times will vary by semester. Students are responsible for their personal transportation to locations; student carpools are encouraged.

PHO 103   History of Photography   3 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course is a survey of the history of photography as a technology and art form. Areas of investigation include historic and contemporary photographic processes, artistic trends and the social uses of the medium since its inception.

PHO 105   Digital Photography Abroad   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; consent required
45 lecture, 15 lab, 0 clinical, 0 other, 60 total contact hours

This course offers students an opportunity to explore digital capture abroad.   Through a series of on-location shoots, lectures, critiques and digital imaging demonstrations, students will create portfolios of photographs revealing their impressions of the chosen location and culture. Digital workflow issues will be addressed throughout the course. An online portfolio will be used as an integral part of the course to exhibit current work. Basic photographic and computer skills are required. Digital cameras will be available for use during the course or students may use their own.

PHO 110   Introduction to the Darkroom   **1 credit**

Level I Prerequisites: Academic Reading and Writing Levels of 6; PHO 111 minimum grade "C-", may enroll concurrently
15 lecture, 0 lab, 0 clinical, 0 other, 15 total contact hours

This course provides a hands-on introduction to darkroom-based photography. Students will shoot, process and print B & W film, develop an awareness of pre-digital working methods, and learn about areas of photography where darkroom work is still in practice. Cameras and all necessary supplies will be provided.

PHO 111   Photography I   **4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

This is a first-term course in basic photography. Areas of study include: camera operation, lighting and composition, image processing, printing and final presentation techniques. Students must have their own manually adjustable digital camera and anticipate additional costs for materials for the course.

PHO 116   Studio Portraits   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; PHO 117 minimum grade "C-"
30 lecture, 0 lab, 0 clinical, 30 other, 60 total contact hours

This intermediate level course provides students with the tools and techniques commonly encountered in a retail or commercial/editorial portrait studio. Beginning with the proficiencies garnered in PHO 117, students implement an expanded range of lighting techniques and strategies to produce photographs of people. A basic command of business forms and ethical issues surrounding the production and publication of these images is also obtained.

PHO 117   Introduction to the Studio   **4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; PHO 111 minimum grade "C-"
30 lecture, 0 lab, 0 clinical, 60 other, 90 total contact hours

This course is a comprehensive overview of the photographic studio workflow, inclusive of tungsten and strobe lighting systems. Students obtain a rudimentary command of techniques necessary to illuminate subject matter ranging from still life to portraits. Assignments investigate the technical and aesthetic issues encountered and resolved during the construction of images. Current computer hardware and software skills necessary to produce and manage images in a digital workflow are also garnered.

PHO 122   Darkroom Techniques   **4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; PHO 110 minimum grade "C"
45 lecture, 0 lab, 0 clinical, 45 other, 90 total contact hours

In this advanced course, students learn the craft of creating high-quality B&W negatives and darkroom prints. Students control tone and contrast using film, fiber-based paper and darkroom processes. Emphasis will be placed on maximizing the expressive qualities of film-based photography. Students with experience equivalent to PHO 210 may contact the instructor for permission to waive the prerequisite.

PHO 127   Digital Photo Imaging I   **4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; PHO 111 minimum grade "C-"
45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

This course is a comprehensive overview of current digital photographic technologies. Students utilize image input devices, such as scanners and digital cameras and imaging software applications to optimize output for print and electronic publication. Assignments investigate color theory, a variety of technical controls in Photoshop and color management.

PHO 129   Black and White Digital Imaging   **4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; PHO 127 minimum grade "C-", may enroll concurrently
45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

In this course, students explore a variety of methods and strategies for making monochrome and color-toned black and white images using digital processes. Students learn to optimize digital camera settings for black and white, optimize exposure and processing in Lightroom and Photoshop software, convert color images to monochrome, apply a variety of color and toning techniques and utilize modern printing technologies.

PHO 174   PHO Co-op Education I   **1-3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; consent required
Level II Prerequisites: PHO 111
0 lecture, 0 lab, 0 clinical, 120 other, 120 total contact hours

Students are placed in an approved industrial work experience to gain skills and knowledge offered by the employer. Together with the instructor and the employer, students set up work assignments and learning objectives to connect classroom learning with career-related work experiences. This is the first of two possible co-op experiences.

PHO 204   Color Photo Design   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; PHO 111 and PHO 127, minimum grade "C-"; PHO 127 may
                               enroll concurrently
30 lecture, 30 lab, 0 clinical, 0 other, 60 total contact hours

This course concentrates on the visual aspects of design with color in photography. Topics include optical color, color theory, color relationships, emphasis with color, psychological effects of color and color control with Adobe Lightroom and Photoshop software. Students will print photographs using a color-managed workflow. This course was previously PHO 124.

PHO 210   Alternative Processes   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; PHO 110 and PHO 111, minimum grade "C"
30 lecture, 0 lab, 0 clinical, 45 other, 75 total contact hours

This course offers an experimental approach to alternative photographic processes. Students employ processes such as pinhole photography, cyanotype, van dyke brown, and lith printing to create new and exciting photographs. Students with experience equivalent to PHO 210 may contact the instructor for permission to waive the prerequisite.

PHO 211   Large Format Photography   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; PHO 111 minimum grade "C-"
30 lecture, 30 lab, 0 clinical, 0 other, 60 total contact hours

This course introduces students to monorail and flatbed large format cameras. Students learn to load and process sheet film, Polaroid film and learn to print large format negatives. Students also learn the use of perspective and depth of field controls and other topics unique to large format photography. Assignments will be completed both in black and white and color.

PHO 212   Large Format Photography II   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; PHO 211 minimum grade "C-"
30 lecture, 30 lab, 0 clinical, 0 other, 60 total contact hours

This course continues the exploration of the technical and visual components of large format photography, with a strong emphasis on developing a personal project. Demonstrations include the use of roll film adapters, formats other than 4x5, focus and perspective enhancement with view camera movements, contact printing, the integration of digital technology with large format photography. Students are expected to develop an individual large format project in this course.

PHO 216   Environmental Portraiture   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; PHO 117 minimum grade "C-"
30 lecture, 0 lab, 0 clinical, 30 other, 60 total contact hours

This intermediate level course provides the tools and techniques commonly encountered when producing work for retail, editorial, or illustrative portraiture on location. Several unique lighting techniques and strategies are implemented to produce photographs of people. Emphasis is placed on preparing all necessary resources, inclusive of models, props, and wardrobe. A basic command of business forms and ethical issues surrounding the production and publication of these images is also obtained.

PHO 219   Photographic Design   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
Level II Prerequisites: PHO 111
15 lecture, 45 lab, 0 clinical, 0 other, 60 total contact hours

This is an intensive review of photographic composition and design techniques with emphasis on design in the photographic image through lecture, demonstration, critique and darkroom practices. Included is a survey of contemporary photographers and new directions in modern photographic images and design.

PHO 220   Advanced Studio Techniques   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; PHO 117 and PHO 127, minimum grade "C-"; PHO 116 or PHO 216, minimum grade "C-", may enroll concurrently in PHO 116
30 lecture, 0 lab, 0 clinical, 30 other, 60 total contact hours

In this course, students will concentrate on advanced image construction techniques and the business issues relevant to their production. Students integrate their previous studio and imaging experiences with the pre- and post-production and critical thinking skills required to produce a job. Emphasis is placed on the business practices and ethical issues behind the creation of images for retail portraiture, commercial publication, and fine-art sectors of the industry.

PHO 227   Photojournalism   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; PHO 111 minimum grade "C-"
45 lecture, 15 lab, 0 clinical, 0 other, 60 total contact hours

This course covers the fundamental principles of communicating newsworthy events, contemporary social issues and human interest stories through still photography. Students develop specialized shooting skills, and apply industry standards and ethics associated with photojournalism.

PHO 228   Digital Photo Imaging II   4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
Level II Prerequisites: PHO 127
45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

This course provides an advanced level of investigation into digital photographic tools and techniques. Students will expand their understanding of digital input devices, photo imaging software and output devices. Students will be encouraged to work toward developing their own creative style. Students with experience equivalent to PHO 127 may contact the instructor for permission to waive the prerequisite.

PHO 230   Portfolio Projects   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; PHO 117 and PHO 228, minimum grade "C-"
Level II Prerequisites: PHO 122 or PHO 129, minimum grade "C-"
45 lecture, 15 lab, 0 clinical, 0 other, 60 total contact hours

This course offers students the opportunity to work on an extended photographic project of the individual's choosing. Emphasis is placed on developing a personal style. Students improve their visual problem-solving skills through researching the technical and aesthetic concerns for their projects and through individual and group critiques. Recommended as a corequisite with Portfolio Seminar.

PHO 231   Portfolio Seminar   4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; PHO 117 and 6 additional PHO courses 100 level or above; minimum grade "C-" all PHO courses

45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

This course is a capstone experience for students completing the photography program. Students will produce a professional portfolio, self-promotional materials and publish their portfolios on the Web. Professional critiques will be conducted on individual portfolios. Students will make contacts with potential employers, clients or transfer schools. PHO 230 may be taken concurrently by students seeking additional emphasis on the production of their final portfolios.

PHO 274   PHO Co-op Education II   **1-3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; PHO 174; consent required
0 lecture, 0 lab, 0 clinical, 120 other, 120 total contact hours

In this course, students gain skills from a new experience in an approved, compensated, industry-related position. Together with the instructor and employer, students set up work assignments and learning objectives to connect classroom learning with career-related work experience. This is the second of two co-op courses.

Physical Education Activity   PEA

PEA 102   Cardiovascular Training   **1 credit**

Level I Prerequisites: No Basic Skills
0 lecture, 0 lab, 0 clinical, 30 other, 30 total contact hours

The purpose of this course is to develop a basic understanding of the equipment and physical requirements necessary for improved cardiovascular endurance and body fat reduction (caloric expenditure). Students are provided with an exercise recommendation based upon American College of Sports Medicine (ACSM) guidelines. Equipment includes treadmills, stairmasters, Nordic tracks, rowing ergometers, airdynes, bicycle ergometers and elliptical machines.

PEA 103   Beginning Golf   **1 credit**

Level I Prerequisites: No Basic Skills
0 lecture, 0 lab, 0 clinical, 30 other, 30 total contact hours

This course is designed for the beginning player who wants to learn the basics of golf. Priority is given to the general golf swing, chipping, putting and course management. Students are given information on what type of equipment to use and how to use it, including proper warm up and stretches. Students in this course will pay greens fees and provide their own clubs.

PEA 104   Intermediate Golf   **1 credit**

Level I Prerequisites: No Basic Skills; PEA 103
0 lecture, 0 lab, 0 clinical, 30 other, 30 total contact hours

This course is designed for the intermediate player who wants to learn more about golf. Priority is given to golf etiquette, course management skills, golfing strategies and golfing for conditions. Students will practice a variety of trouble shots and more advanced shots. Students in this course will pay greens fees and provide their own clubs. It is recommended that students have a golf score of 110 or less for 18 holes or have had PEA 103 before registering for this course.

PEA 105   Weight Training - Cybex/Free Weights   **2 credits**

Level I Prerequisites: No Basic Skills
0 lecture, 0 lab, 0 clinical, 30 other, 30 total contact hours

The purpose of this course is to develop basic weight training skills. Using Cybex and free weight equipment, students develop an understanding of the basic weight training exercises associated with each major muscle group. Emphasis is placed on understanding the proper form and technique necessary to train safely and effectively. (Free weight training is optional.)

PEA 109   Beginning Tennis — 1 credit
Level I Prerequisites: No Basic Skills
0 lecture, 0 lab, 0 clinical, 30 other, 30 total contact hours

The purpose of this course is to introduce students to the game of tennis. The fundamentals of the game are taught in a progressive learning experience. Students are instructed in the areas of skill development and scoring. A tennis racquet and tennis shoes are required.

PEA 115   Health and Fitness Experience — .5 credit
Level I Prerequisites: No Basic Skills; Minimum of 18 years of age; Student must be enrolled in at least 3 other credit hours.
0 lecture, 0 lab, 0 clinical, 15 other, 15 total contact hours

Providing access to the Health & Fitness Center at Washtenaw Community College, this course encapsulates the benefits of regular and varied physical fitness activities. Students must be 18 years of age and enrolled in a minimum of 3 credits in the term of enrollment. This course may be repeated for credit five (5) times for a total of 3 credits.

Physical Therapist Assistant — PTA

PTA 100   Fundamentals of Physical Therapy — 2 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to Physical Therapist Assistant program
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

This course serves as an introduction to the Physical Therapist Assistant Program and includes the historical overview of the physical therapy career, the role of the physical therapist assistant as a member of the health care team, and the scope of practice of the physical therapist assistant with emphasis on the State of Michigan's standards. It includes ethical behavior, interpersonal communication, patient motivation and basic documentation. Students are expected to relate health care observations and experiences to course materials and discussions.

PTA 102   Introduction to Physical Therapy — 1 credit
Level I Prerequisites: Academic Reading and Writing Levels of 6
15 lecture, 0 lab, 0 clinical, 0 other, 15 total contact hours

In this course, students examine careers in physical therapy with an emphasis on the physical therapist assistant. It includes an overview of the educational requirements, state law regarding delivery of physical therapy services, the responsibilities of the physical therapist and the physical therapist assistant and the career opportunities for the physical therapist and the physical therapist assistant. This course was previously HSC 102.

PTA 150   Therapeutic Procedures I — 3 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to Physical Therapist Assistant program
15 lecture, 60 lab, 0 clinical, 0 other, 75 total contact hours

This course introduces physical therapist assistant students to the fundamental skills of patient care and management under the direction and supervision of a licensed physical therapist. Students will learn to safely and appropriately apply these skills in various patient conditions. The development of clinical decision-making skills and time management during patient care activities are emphasized. Content includes, but is not limited to, infection control procedures, vital signs, bed mobility skills, proper body mechanics, range of motion activities, wheelchair management, transfer techniques and basic gait training skills.

PTA 160   Therapeutic Procedures II   **2 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; PTA 150 minimum grade "C"
15 lecture, 30 lab, 0 clinical, 0 other, 45 total contact hours

This course provides the physical therapist assistant student with patient care and patient management skills for safe and appropriate use with patients. Lecture, demonstrations, lab practice and patient simulations will be used to develop decision-making and problem-solving skills with an emphasis on safety. Topics include wound management and muscle performance, but are not limited to, gait training with assistive devices, accessibility, pulmonary hygiene and orthotics and prosthetics.

PTA 180   Clinical Kinesiology   **4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to Physical Therapist Assistant program
30 lecture, 60 lab, 0 clinical, 0 other, 90 total contact hours

This course studies human movement and includes the principles of basic physics and biomechanics. It examines the relationship of structures (skeletal, joint, neural, muscle) to function and examines normal and abnormal movement. Emphasis is on functional application to provide a foundation and rationale for therapeutic interventions necessary for the physical therapist assistant student. Laboratory experiences correlate to the lectures which include the study of the head and trunk, extremities, posture and gait. This course contains material previously taught in PTA 180 and PTA 190.

PTA 195   Introduction to Disease   **2 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; PTA 180 minimum grade "C"
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

This course introduces the study of disease and disease processes in humans. Emphasis is on the impact on body systems, development and rehabilitation. Lecture and student presentations will describe diagnosis and pathology, treatment, medication, prognosis and implications for physical therapy treatment by the PTA under the direction and supervision of a licensed physical therapist.

PTA 198   Soft Tissue Management   **2 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; PTA 220 minimum grade "C"
15 lecture, 30 lab, 0 clinical, 0 other, 45 total contact hours

This course applies and builds on the knowledge of human anatomy and clinical kinesiology and instructs the PTA student in the safe and appropriate use of soft tissue techniques. These include, but are not limited to, basic soft tissue massage and compression to be performed under the direction and supervision of a licensed physical therapist. Lecture, demonstration, lab practice and patient simulations will be used to develop problem-solving and technical skills needed for clinical application.

PTA 200   Therapeutic Modalities   **4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; PTA 180 minimum grade "C"
30 lecture, 60 lab, 0 clinical, 0 other, 90 total contact hours

This course introduces the physical therapist assistant student to the principles and skills necessary for the safe and appropriate administration of physical therapy modalities under the guidance and direction of a licensed physical therapist. Correlating lecture and laboratory experience topics will include therapeutic heat and cold, and select physical agents and modalities.

PTA 220   Therapeutic Exercise I   **4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; PTA 180 minimum grade "C"
30 lecture, 60 lab, 0 clinical, 0 other, 90 total contact hours

This course introduces the PTA student to the theory, principles and procedures of therapeutic exercise providing the basis for safe and appropriate selection, administration, monitoring and adjustment of exercise programs (including balance, strengthening and posture). Students develop a rationale for the selection and use of basic exercise equipment and practice the development, selection and progression of goal-directed therapeutic exercise programs as well as monitoring and documenting patient performance and response. Laboratory activities correlate with lecture topics and include practice, patient simulations, and demonstrations.

PTA 225   Therapeutic Exercise II   **4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; PTA 220 minimum grade "C"
Corequisites: PTA 198 and PTA 240
30 lecture, 60 lab, 0 clinical, 0 other, 90 total contact hours

This course continues the study and application of theory, principles and procedures necessary for patient treatment using goal-directed exercise as a treatment modality, under the direction and supervision of a licensed physical therapist. General exercise as well as exercise for specific populations and diagnoses will be included. Students will practice instruction, progression and justification of exercise programs as well as monitoring and documentation of patient response and/or simulated patient interaction. Laboratory activities will correlate with lectures and will include practice, patient simulations and demonstrations.

PTA 230   Clinical Education I   **1 credit**

Level I Prerequisites: Academic Reading and Writing Levels of 6; PTA 220 minimum grade "C", may enroll concurrently
0 lecture, 0 lab, 48 clinical, 0 other, 48 total contact hours

This course provides the qualified physical therapist assistant student with the opportunity to observe and participate in structured and supervised experiences in health care settings. Students will be placed by their program clinical education coordinator in off-site locations and given limited opportunity to safely and appropriately apply therapeutic interventions. This initial clinical experience will also provide the background and foundation for future coursework. This course is graded on a pass/no pass grading system.

PTA 240   Clinical Education II   **2 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; PTA 230 with grade "P"
0 lecture, 0 lab, 120 clinical, 0 other, 120 total contact hours

This second clinical experience provides the qualified physical therapist assistant student with supervised clinical learning experiences and the opportunity to further develop and practice necessary clinical decision-making, treatment and documentation skills. Students will be assigned to varied off-site health care settings for 3 weeks, 40 hours/week, under the supervision of a licensed PT or PTA from an accredited two-year program. This course is graded on a pass/no pass grading system.

PTA 250   Clinical Education III   **5 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; PTA 240 with grade "P"
0 lecture, 0 lab, 480 clinical, 0 other, 480 total contact hours

This third clinical experience consists of full-time clinical placements in off-site health care settings. Qualified physical therapist assistant students will perform activities of supervised patient care, documentation and family instruction, acting as a member of the health care team with the purpose of achieving entry-level competency. This course is graded on a pass/no pass grading system.

PTA 280   Clinical Concepts   **1 credit**
Level I Prerequisites: Academic Reading and Writing Levels of 6; PTA 240 with grade "P"
15 lecture, 0 lab, 0 clinical, 0 other, 15 total contact hours

This course reviews and builds upon classroom and clinical education experiences to examine ethical considerations in patient care relationships, communication between Physical Therapists and Physical Therapist Assistants, preparation for employment, professional growth after graduation, departmental organization and critical review of published research.

Physics   **PHY**

PHY 100   Physics for Elementary Teachers   **4 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6
60 lecture, 30 lab, 0 clinical, 0 other, 90 total contact hours

In this course, students study the basic laws governing the physical universe. This course helps prospective educators learn to explain everyday physical phenomena in elementary terms. Prospective educators will also learn to select materials and provide instruction for hands-on activities that help students construct a picture of our physical universe.

PHY 105   Conceptual Physics   **4 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 3
45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

Designed for both transfer and vocational students with no previous physics experience, but desiring a working knowledge of physics, Physics 105 surveys the major topics of Newtonian mechanics, heat, vibration and waves, electromagnetism and light using a conceptual approach with a minimum of mathematics.

PHY 110   Applied Physics   **4 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 3
45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

Technical-vocational students with no previous experience with physics should take this course to fulfill their program requirements. Topics covered are: mechanics (kinematics, forces and torque, work-energy, machines), static fluids and properties of matter and heat. Laboratory exercises give students an opportunity to test theoretical principles.

PHY 111   General Physics I   **4 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 7; or Academic Math Level 5 and MTH 178 or MTH 180, minimum grade "C" in math courses, may enroll concurrently in either course
45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

This is the first of a two-course sequence in algebra-trigonometry based Newtonian physics for pre-professional and liberal art students. Physics 111 introduces and develops the concepts of kinematics, forces, work-energy, impulse-momentum (translational and angular), fluids, vibration and waves and heat. Laboratory exercises are included to assist students in understanding the above topics.

PHY 122   General Physics II   **4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; PHY 111 minimum grade "C"
45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

Physics 122 is the second part of a two-course sequence in algebra-trigonometry based physics for pre-professional and liberal arts students. Physics 122 covers the concepts of electricity, magnetism, light and modern physics extending the students' knowledge of physics learned in PHY 111. Laboratory exercises are included to assist students in understanding the above topics.

PHY 211   Analytical Physics I   **5 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; high school physics or PHY 111; MTH 191, minimum grade "C" all
                                    MTH, PHY and high school requirements
60 lecture, 45 lab, 0 clinical, 0 other, 105 total contact hours

This is the first of a two-course sequence in calculus-based Newtonian physics for students intending to major in science or engineering. Physics 211 develops the concepts of mechanics (kinematics, forces, work-energy, impulse-momentum, translational and angular, fluids), vibration (and waves) and fundamental thermodynamics. Laboratory exercises are included to assist students in understanding the above topics and to develop skills in data analysis methods.

PHY 222   Analytical Physics II   **5 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; PHY 211 minimum grade "C"
60 lecture, 45 lab, 0 clinical, 0 other, 105 total contact hours

This second part of a two-course sequence in calculus-based physics covers the concepts of electricity, magnetism, light and modern physics.

Political Science   PLS

PLS 112   Introduction to American Government   **3 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This class studies the forms and functions of American government with emphasis on national government. The decision-making process in Congress, the Presidency and the federal court system are studied. The course also examines the relationship of political parties and public opinion to the electoral process.

PLS 150   State and Local Government and Politics   **3 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

Non-federal (state and local) governments will be examined in this course. Special emphasis on the governments of Michigan and Washtenaw County provides for an investigation of the challenges of decision-making and governance in addressing the immediate needs of its citizens.

PLS 211   Introduction to Comparative Government   3 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This class surveys the political systems of Great Britain, France, Italy, Germany, the former Soviet Union and China. It is recommended that students take one course from the ANT, GEO, HST or PLS disciplines or contact the instructor for permission before registering for this course.

PLS 220   Politics and the Media   3 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6; PLS 112 minimum grade "C-"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course is an introduction to the role of the mass media in the political process. It critically examines the role of the mass media in shaping American political life, focusing on the historical development of the mass media in American society, the economic and political forces that shape news coverage of political leaders and institutions, the influence of the mass media on the American public and normative assessments of how well the media promotes public deliberation in a democracy.

PLS 250   Campaigns and Elections   3 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course is an introduction to campaigns and elections in the United States. The purpose is to provide students with an intellectual understanding and practical working knowledge of the electoral process. The course will examine key actors in the electoral system: candidates, parties, interest groups, voters and the mass media. Although the focus will be on national elections, both congressional and presidential, state and local elections will also be examined. This course will provide students with the knowledge that will equip them to become more informed and effective citizens in the electoral process.

PLS 260   Introduction to Political Thought   3 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6; PLS 112 minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course presents an overview of political thought, or theory, from the early Greeks through the 19th century works of Marx, Mills and Thoreau. The focus will be on the evolution of political thought as well as the different objectives and values that have driven the quest for the "ideal" form of government.

Psychology   PSY

PSY 100   Introduction to Psychology   3 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This class provides an introduction to the scientific study of psychology - the study of mental processes and behavior. This is a survey course including such topics as psychological development, learning, thinking, motivation, emotion, perception, intelligence, aptitudes and personality. Basic principles and their practical applications are discussed.

PSY 107   African - American Psychology   3 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course is organized around the premise that there is a distinctive Afro-American psychological frame of reference that is evident in the behavior and lifestyles of African Americans. This course aims to build a conceptual model to help analyze and explain the psychological behavior of African Americans.

PSY 117   Psychology of Parenting   3 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

The focus of this course is to facilitate successful parenting. Using examples from prenatal through adolescence, the student will identify the characteristics of constructive and destructive parenting. Students will discuss psychological theory as the explanation for improved parent-child interaction and communication.

PSY 150   Psychology of Work   3 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course provides knowledge, tools and experiences to facilitate students entering an organization and comprehending their role in it. Students will learn about the interdependency of the organization and the individual. The foundation of this course is based in Organizational Development, I/O Psychology, General Psychology, Social Psychology and Personality Theory.

PSY 200   Child Psychology   3 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course provides an overview of the psychology of human behavior from conception to adolescence. It includes the study of psychological processes involved in physical, cognitive and social personality development. Major theories of human development are reviewed and contrasted. The course is especially constructed and taught to be of value to those entering the fields of social work, elementary or secondary education, or nursing and various allied health fields.

PSY 206   Life Span Developmental Psychology   4 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This course provides an overview of the biological, cognitive, social and affective domains of human growth and development from the prenatal period until death. The course emphasizes the relationship of growth and development to behavior through the life span. Major theories of human development, as well as research methods, are reviewed and contrasted. The course is especially constructed and taught to be of value to those entering the fields of social work, elementary or secondary education, or nursing and various allied health fields.

PSY 210   Behavior Modification   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; HSW 100 or PSY 100
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course covers basic behavioral principles and their applications to individuals with mental illness, developmental disabilities, closed head injuries, problems with aging and problems of daily living. Students will learn to conduct psychosocial rehabilitation and psycho-educational groups.

PSY 220   Human Development and Learning   4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This course covers developmental topics including cognitive, psychological and social development from birth through adolescence. Primary focus is on the role of parents and teachers in fostering learning and development. The topics of readiness to learn, windows of opportunity, brain-based teaching and learning techniques, learning theory, classroom management and planning and assessment of learning outcomes are addressed.

PSY 240   Drugs, Society and Human Behavior   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course provides an overview of the use and abuse of legal and illicit drugs from a psychological perspective. The course covers the prevalence of use and abuse of psychoactive drugs, both historically and currently; the physiological mechanisms of action of different categories of psychoactive drugs; the individual and societal determinants and consequences of drug use; and the relevance of these issues to prevention and treatment programs. It is recommended that PSY 100 and/or BIO 102 be taken before or concurrently with this course. This course contains material previously taught in PSY 130.

PSY 251   Education of Exceptional Children   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; CCP 101, PSY 100, PSY 200, PSY 206 or HSC 147, minimum
                              grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course presents an overview of the major categories of exceptionality. Methods for identifying and working with children in child care, recreational and educational settings are explored. Working with an interdisciplinary team and partnering with parents is a major focus. A working knowledge of resources, a comfort level for working with exceptional children and their families, and exploring the roles of professionals who work with exceptional populations are stressed.

PSY 257   Abnormal Psychology   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; PSY 100 minimum grade "C-"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This is a course dealing with the abnormalities of certain types of personalities, their origin, symptoms, developments and treatment, short of psychiatric competence. Main topics include: simple maladjustment; disturbances of emotional nature or perception, memory, judgment, thought, early symptoms of schizophrenai and disorders of mobility and speech.

PSY 260   Introduction to Human Sexuality   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course provides a survey of the psychological research concerned with human sexuality. Areas presented include: research, anatomy, dysfunctions and their treatment, family planning methods, sexual communication, sexually transmitted diseases and sexual variation.

Radiography   RAD

RAD 100   Introduction to Diagnostic Imaging   **2 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

This course is a prerequisite for admission to the radiography program. The purpose of this course is to provide an overview of diagnostic medical imaging modalities with emphasis on the role of the radiologic technologist in the healthcare delivery system. Topics include historical development of radiological sciences, professionalism, career development, organization of healthcare systems, introduction to radiographic equipment, procedures, radiation protection and medicolegal issues.

RAD 101   Methods in Patient Care   **1 credit**

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to the Radiography program
15 lecture, 15 lab, 0 clinical, 0 other, 30 total contact hours

This course is designed to teach the student how to therapeutically communicate with patients. Students will also learn to assess a patient's condition and how to provide quality patient care. This course will include laboratory sessions which will teach the patient care skills that are within the scope of practice for a radiologist technologist, i.e. vital signs, blood pressure, venipuncture, airway management; patient transfer and immobilization techniques; infection control practices; aseptic and non-aseptic techniques.

RAD 103   Medical Professionalism in Clinical Radiography   **1 credit**

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to the Radiography program
15 lecture, 0 lab, 0 clinical, 0 other, 15 total contact hours

This course is an introduction to clinical education, clinical supervision, and professionalism in the medical imaging settings. Topics include patient privacy and information confidentiality, professional behavior, student clinical skill performance and assessment, and the Clinical Instructor-student dynamic.

RAD 110   Clinical Education   **2 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; RAD 101 minimum grade "C-"
0 lecture, 0 lab, 240 clinical, 0 other, 240 total contact hours

This course provides structured clinical experience in the application of knowledge and skill in positioning the upper extremity, chest and abdomen; and demonstration of knowledge concerning professional ethics, courtesy and empathy in handling patients, film processing/imaging plate (IP) handling and image archiving and radiographic equipment.

RAD 111   Fundamentals of Radiography   **2 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to the Radiography program; RAD 100 minimum grade "B-"
15 lecture, 30 lab, 0 clinical, 0 other, 45 total contact hours

This course is designed to prepare students to operate radiographic equipment in the clinical setting. Students will acquire the knowledge and skills needed to operate basic fixed and mobile x-ray equipment and accessory devices that are used to produce quality diagnostic radiographic images. This course will include laboratory sessions which will integrate the theories of image production with the practical application of equipment operation.

RAD 112   Radiographic Positioning I   **2 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; RAD 101 and RAD 110, minimum grade "C-"; RAD 110 may enroll concurrently
15 lecture, 45 lab, 0 clinical, 0 other, 60 total contact hours

This course presents the theories and practices that are utilized in the clinical setting to produce diagnostic radiographs of the chest, abdomen and upper extremity. Radiographic terminology, patient preparation, patient positioning, proper manipulation of radiographic equipment, radiation safety practices, image evaluation, professional standards and medical ethics will be discussed and practiced in the laboratory setting.

RAD 120   Clinical Education   **2 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; RAD 110 minimum grade "C-"
0 lecture, 0 lab, 240 clinical, 0 other, 240 total contact hours

This course provides structured clinical experience in the application of knowledge and skill in positioning the spinal column, lower extremities and related anatomy. This course continues the discussion of professional ethics, courtesy and empathy in handling patients, radiation safety, film processing/imaging plate (IP) handling and image archiving and radiographic equipment.

RAD 123   Radiographic Positioning II   **2 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; RAD 112 and RAD 120, minimum grade "C-"; RAD 120 may enroll concurrently
15 lecture, 45 lab, 0 clinical, 0 other, 60 total contact hours

This course presents the theories and practices that are utilized in the clinical setting to produce diagnostic radiographs of the lower extremity, vertebral column and bony thorax. Radiograph terminology, patient preparation, patient positioning, proper manipulation of radiographic equipment, radiation safety practices, image evaluation, professional standards and medical ethics will be discussed and practiced in the laboratory setting.

RAD 124   Principles of Radiographic Exposure   **2 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; RAD 101 minimum grade "C-"
30 lecture, 15 lab, 0 clinical, 0 other, 45 total contact hours

This course is a continuation of material presented in RAD 111. The content of this course includes a comprehensive study of atomic theory, radiographic exposure technique, image production using analog and digital mediums, and the appropriate use of radiographic accessory devices. Students will learn theoretical principles for achieving optimal image quality and techniques for reducing patient radiation exposure. Laboratory sessions are included to provide a means of integrating theory with practical applications for use in the clinical setting. This course contains material previously taught in RAD 127.

RAD 125   Radiographic Procedures and Related Anatomy   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; RAD 110 minimum grade "C-", may enroll concurrently

45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course is designed to teach the student how to obtain quality images of the gastrointestinal system, accessory organs, urinary system and other special procedures associated with radiography. Students will also learn practical applications of contrast media and the appropriate use of fluoroscopic equipment and imaging accessories.

RAD 150   Clinical Education   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; RAD 120 minimum grade "C-"
0 lecture, 0 lab, 384 clinical, 0 other, 384 total contact hours

This course provides structured clinical experience in the application of knowledge and skill in positioning the chest and thorax, abdomen, spinal column, upper and lower extremities and related anatomy while working in general, portable and fluoroscopic radiography. The course also provides students with an opportunity to learn and demonstrate professional ethics, courtesy and empathy in handling patients, radiation safety, film processing/imaging plate (IP) handling and image archiving and radiographic equipment manipulation.

RAD 190   Physical Foundations of Radiography   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; RAD 110 minimum grade "C-"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course covers the theoretical and practical application of radiation physics with an emphasis on electromagnetic radiation, electricity, magnetism, x-ray circuitry, radiation production and radiation's interaction with matter. This course was previously RAD 200.

RAD 215   Radiography of the Skull   **2 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; RAD 150 and RAD 217, minimum grade "C-"; RAD 217 may
                        enroll concurrently
15 lecture, 30 lab, 0 clinical, 0 other, 45 total contact hours

This course is designed to teach the student how to obtain quality radiographic images of the skull. Students will also be able to critically analyze the radiographic images of the skull and identify the pertinent anatomy. Laboratory sessions are included to provide the student with experience in skull positioning.

RAD 217   Clinical Education   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; RAD 150 minimum grade "C-"
0 lecture, 0 lab, 336 clinical, 0 other, 336 total contact hours

This course provides structured clinical experience in the application of knowledge and skill in positioning the skull and related anatomy. This course continues the discussion of professional ethics, courtesy and empathy in handling patients, radiation safety, film processing/imaging plate (IP) handling and image archiving and radiographic equipment.

RAD 218   Radiation Biology and Protection   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; RAD 120 minimum grade "C-"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course will present the principles of radiobiology and radiation protection. Students will analyze the basic theories of the biological, genetic and somatic effects of radiation on human cells and tissue and learn the current radiation protection standards and practices used in the healthcare setting to protect themselves, patients and others from exposure to radiation.

RAD 222   Pharmacology in Diagnostic Imaging   2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; RAD 217 minimum grade "C-", may enroll concurrently
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

In this course, students are provided with an introduction to pharmacology and contrast media administration as it relates to the medical imaging profession. Students gain an understanding of diagnostic contrast media and the effects of these agents on the human body. Students also receive instruction in basic techniques of venipuncture, appropriate patient care practices during drug administration and management of medical emergencies in the diagnostic imaging department.

RAD 223   Sectional Anatomy   2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; RAD 217 minimum grade "C-"
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

This course will present an introduction to sectional anatomy. Students will learn the basic protocols for obtaining and analyzing sectional images. The sectional anatomy of the head, neck, chest, abdomen, pelvis, spine and joints will be studied.

RAD 225   Clinical Education   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; RAD 217 minimum grade "C"
0 lecture, 0 lab, 336 clinical, 0 other, 336 total contact hours

This course provides continued structured clinical experience in the application of knowledge and skills for positioning the upper and lower extremities, chest, abdomen, spinal column and skull during contrast studies, surgical procedures and portable radiography. Students will demonstrate their mastery in the design and operational characteristics of equipment and accessories in diagnostic radiography.

RAD 226   Radiographic Quality Assurance   2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; RAD 217 minimum grade "C-"
15 lecture, 30 lab, 0 clinical, 0 other, 45 total contact hours

This course introduces the student to the basic concepts of quality assurance as it relates to diagnostic imaging equipment. The evaluation of radiographic equipment to assure consistency in the production of diagnostic images is investigated. Students perform test and management procedures in the radiography lab to gain a better understanding of the theories and practices associated with quality assurance programs in the diagnostic imaging department. This course contains material previously taught in RAD 113.

RAD 235   Pathology for Radiographers   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; RAD 150 minimum grade "C-"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course is a survey of basic pathology and includes a study of the disease process and how various diseases alter the appearance and function of human organisms, including infectious diseases, tumors, chemical injuries and the conditions of illness involving the systems of the body. This course was previously RAD 135.

RAD 240   Clinical Education   2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; RAD 225 minimum grade "C-"
0 lecture, 0 lab, 224 clinical, 0 other, 224 total contact hours

This course provides structured clinical experience in the application of knowledge and skill in positioning the chest and thorax, abdomen, spinal column, skull, upper and lower extremities and related anatomy while working in general, portable and fluoroscopic radiography. The course also provides students with an opportunity to learn and demonstrate professional ethics, courtesy and empathy in handling patients, radiation safety, film processing/imaging plate (IP) handling and image archiving and radiographic equipment manipulation.

RAD 259   Introduction to Computed Tomography (CT) Instrumentation and Protocols   1 credit

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to Computed Tomography (CT) program
15 lecture, 0 lab, 0 clinical, 0 other, 15 total contact hours

This is a course for certified technologists, ARRT (R), ARRT (N), ARRT (T), and (CNMT), who are admitted to the computed tomography (CT) program. An overview of the major components of a computed tomography (CT) scanner, how they work, their function, and the technologists interface with them, and the basic scanning protocols common to CT imaging will be presented.

RAD 261   Patient Care in Computed Tomography (CT)   1 credit

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to Computed Tomography (CT) program
15 lecture, 0 lab, 0 clinical, 0 other, 15 total contact hours

This is a course for certified technologists, ARRT (R), ARRT (N), ARRT (T), and (CNMT), who are admitted to the computed tomography (CT) program. The theory and practice of the basic techniques of venipuncture and the administration of contrast media for computed tomography (CT) procedures will be presented. Other topics include patient care, education, and management protocols for CT procedures.

RAD 262   Principles of Computed Tomography (CT)   2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to the Computed Tomography (CT) program
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

This is a course for certified technologists, ARRT (R), ARRT (N), ARRT (T), and (CNMT), who are admitted to the computed tomography (CT) program. The history of computed tomography, equipment design and function, and the basic fundamentals of CT scanning will be presented.

RAD 263   Practical Computed Tomography (CT) Imaging   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to the Computed Tomography (CT) program; RAD 259 and RAD 261, minimum grade "C"; may enroll concurrently in both courses
Corequisites: RAD 265
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This is a course for certified technologists, ARRT (R), ARRT (N), ARRT (T), and (CNMT), who are admitted to the computed tomography (CT) program. Computed tomography (CT) scanning protocols, patient care, and related pathology will be covered.

RAD 265   Computed Tomography (CT) Clinical Education I   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to Computed Tomography (CT) program
Corequisites: RAD 263
0 lecture, 0 lab, 312 clinical, 0 other, 312 total contact hours

This is the first clinical course for certified technologists, ARRT (R), ARRT (N), ARRT (T), and (CNMT), who are admitted to the computed tomography (CT) program. Students will apply knowledge and skills learned in the classroom to the performance of computed tomography (CT) procedures in the clinical setting. Students are expected to gain practical experience and demonstrate competency in the area of CT protocols and parameter, equipment operation, quality control, and image critique. This course will include 6 hours of lecture and a 13 week, 24-hours/week clinical rotation under the supervision of a certified computed tomographer.

RAD 266   Advanced Computed Tomography (CT) Imaging   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; RAD 265 minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This is a course for certified technologists, ARRT (R), ARRT (N), ARRT (T), and (CNMT), who are admitted to the computed tomography (CT) program. Advanced computed tomography (CT) techniques, including the principles and application of 3D imaging will be discussed.

RAD 267   Computed Tomography (CT) Clinical Education II   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; RAD 265 minimum grade "C"
0 lecture, 0 lab, 360 clinical, 0 other, 360 total contact hours

This is the second clinical course for certified technologists, ARRT (R), ARRT (N), ARRT (T), and (CNMT), who are admitted to the computed tomography (CT) program. Students will complete all documentation and competency training necessary for the American Registry of Radiologic Technologists (ARRT) computed tomography certification examination. Students will be assigned to a health care facility for 15 weeks, 24 hours/week (360 clinical hours), under the supervision of a certified technologist.

RAD 270   Principles of Mammography   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to the Mammography program
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This is the first course in the mammography program for certified radiologic technologists. The history of mammography and a comprehensive review of breast anatomy, physiology, mammographic positioning protocols, and breast pathology will be presented.

RAD 271   Mammography Quality Control (QC)   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to the Mammography program; RAD 270 minimum grade "C", may enroll concurrently
Corequisites: RAD 273
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This is the second course in the mammography program for certified radiologic technologists. Topics include physics, instrumentation, quality assurance, and quality control of analog and digital mammography imaging systems. The regulations established under the Mammography Quality Standards Act (MQSA) will also be presented. The title of this course was previously Mammography Procedures and QA.

RAD 273   Mammography Clinical Education   2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to the Mammography program; RAD 270 minimum grade "C", may enroll concurrently
Corequisites: RAD 271
0 lecture, 0 lab, 240 clinical, 0 other, 240 total contact hours

This course provides the certified radiologic technologist with a structured and supervised clinical experience. Students will apply knowledge and skills learned in the classroom to the performance of mammographic examinations. Students are expected to gain practical experience and demonstrate competency in the area of patient positioning, breast examination, equipment operation, quality control, and film critique. Students will be assigned to a health care facility for 10 weeks, 24 hours/week, under the supervision of a certified mammographer.

RAD 290   International Studies in Radiography   2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; RAD 120 minimum grade "C-"
0 lecture, 60 lab, 0 clinical, 0 other, 60 total contact hours

This course offers students in radiography the opportunity to use their radiography training in a new and exciting venue. Each year, students will travel to Peru to do field work and research on mummies, human and animal bones, pottery and other artifacts. The students will have the opportunity to compare cultural differences between Peru and the United States. The students will visit various historical sites within Peru.

Reading   REA

REA 070   Reading Comprehension I   4 credits

Level I Prerequisites: Academic Reading Level 3 or ENG 034; no minimum writing level
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

Reading Comprehension I is the first course in the sequence of developmental reading courses. This course is designed to develop the critical reading skills necessary for success in college-level courses. Satisfactory/unsatisfactory grading is used. Successful students may not repeat this course; unsuccessful students may repeat the course once. Satisfactory completion of REA 070 is required to advance to REA 071. This course was previously ACS 070.

REA 071   Reading Comprehension II   4 credits

Level I Prerequisites: REA 070 with grade "S"
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This course is a continuation of REA 070. It meets along with a REA 070 class, however students are required to complete more advanced individual and Reading Center assignments. Satisfactory/unsatisfactory grading is used. Successful completion of this course with a grade of "S" will raise a student's Academic Reading level to 4.

Robotics   ROB

ROB 101   Robotics I - I   2 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6
30 lecture, 15 lab, 0 clinical, 0 other, 45 total contact hours

This is the first course of the robotics series. It is a beginning level course where students are exposed to various aspects of industrial robots and automated manufacturing. Studies include an introduction to hands-on programming using industrial robotic simulation software. This course contains material previously taught in ROB 121. ROB 101 is generally offered in the first 7 1/2 week session.

ROB 110   Robotics I - II   2 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6; ROB 101 minimum grade "C", may enroll concurrently
15 lecture, 30 lab, 0 clinical, 0 other, 45 total contact hours

This course continues the robotic series and includes additional information on the types of robots, application of flexible automation, open and closed loop control systems, tooling and various types of sensors and their operation. Integrating the use of inputs and outputs (I/O) and counters into structured robot programs is also covered. Field trips to local manufacturing firms that use robotic equipment will help the students understand and witness concepts presented in class. This course contains material previously taught in ROB 121. ROB 110 is generally offered in the second 7 1/2 week session.

ROB 174   ROB Co-op Education I   1-3 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6; consent required
0 lecture, 0 lab, 0 clinical, 120 other, 120 total contact hours

In this course, students gain skills from a new experience in an approved, compensated industry-related position. Together with the instructor and employer, students set up work assignments and learning objectives to connect classroom learning with career-related work experience. This is the first of two possible co-op experiences.

ROB 212   Robotics II   4 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6; ROB 101 and ROB 110
30 lecture, 60 lab, 0 clinical, 0 other, 90 total contact hours

This class concentrates on programming techniques for industrial robots. Students learn to program different types of robots incorporating inputs and outputs into their programs. The course is based on a series of student projects that, step by step, introduce each new command or concept. Students spend most of the class time in the lab and are expected to spend extra hours during scheduled open labs. Students with experience equivalent to ROB 101 and ROB 110 may contact the instructor for permission to waive the prerequisite.

ROB 222   Robotics Simulation   2 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6
Corequisites: ROB 223
15 lecture, 30 lab, 0 clinical, 0 other, 45 total contact hours

This course provides an introduction to Robotic Simulation using the IGRIP software. Students learn how to build computer simulated models of robotic workcells. Programming and running these simulations are also covered. Hands-on use of the software is an integral part of the course.

ROB 223   Robotics III   **2 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6; ROB 212
Corequisites: ROB 222
15 lecture, 30 lab, 0 clinical, 0 other, 45 total contact hours

Students learn to work with peripheral devices in various robotic workcells. Labs include part recognition, sorting, counting, measuring and palletizing. Programmable controllers are used to interface robots with other automated equipment. Students are introduced to automated conveyors, vision systems, bar coding and automated welding. It is recommended that students complete ELE 224 Programmable Controllers before taking this course.

ROB 224   Robotics IV   **4 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6; ROB 223 minimum grade "C"
30 lecture, 60 lab, 0 clinical, 0 other, 90 total contact hours

This course involves advanced programming of robots and programmable controllers in an integrated workcell. Problems related to maintenance and trouble-shooting constitute a major segment of the course. A group project involving the design and construction of a workcell that simulates some industrial process is an enjoyable conclusion to this program.

ROB 274   ROB Co-op Education II   **1-3 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6; ROB 174; consent required
0 lecture, 0 lab, 0 clinical, 120 other, 120 total contact hours

In this course, students gain skills from a new experience in an approved, compensated, industry-related position. Together with the instructor and employer, students set up work assignments and learning objectives to connect classroom learning with career-related work experience. This is the second of two co-op courses.

Science   SCI

SCI 101   The Nature of Science   **3 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course allows students to acquire an appreciation of the importance of the natural sciences to everyday life. The emphasis is on science as a way to evaluate the validity of scientific information in the media and on the Internet. The goal is for students to apply the basic laws, concepts, and themes that underlie our natural world in order to place important public issues such as the environment, energy and medical advances in a scientific context.

SCI 102   Applied Science   **3 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6; Member of the United Association
45 lecture, 15 lab, 0 clinical, 0 other, 60 total contact hours

This course prepares members of the pipe trades to accurately apply principles of physics to their work. Five major areas are studied: water and steam; hydraulics and pneumatics; mechanics; metals, alloys, synthetics; and corrosion. Within each of these areas, apprentices will develop their understanding of the concepts underlying the various aspects of their trade so that they can perform to accepted standards. This course is open only to apprentices in the United Association.

Sociology   SOC

SOC 100   Principles of Sociology   3 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course examines the foundation of sociology as the basis of group behavior in a society, which includes social interaction, social control, social inequality, as well as social change. Emphasis is placed on the impact of social institutions on the self.

SOC 155   Hip-Hop Culture and Society   3 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course offers a critical analysis of Hip-Hop culture through an application of sociological and psychological concepts. Theories will be applied to current ethical and social issues as expressed through Rap lyrics. Topics to be examined include race, class, gender, materialism, alienation, crime, religion, sex and misogyny. Biographical studies of Rap artists will be used to investigate the relationship between Hip-Hop culture and the larger society.

SOC 202   Criminology   3 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

An examination is provided of the theories which attempt to explain criminal behavior. Punishment versus rehabilitation schools of thought is dealt with as well as capital punishment. Attention is also given to the functioning of police and the court system.

SOC 205   Race and Ethnic Relations   3 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6; SOC 100 minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students examine the social and historical development of racial and ethnic stratification, and the legacy of inter-group conflict, racism and discrimination. It covers sociological approaches to understanding the patterns of ethnic relations in the United States and other countries. Additionally, it analyzes the complex nature of social, economic and power inequalities stemming from the intersection of social class, religion and gender within and among racial-ethic groups.

SOC 207   Social Problems   3 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course examines social problems which affect societies and the lives of the people who live in them. Emphasis is placed on a theoretical analysis of social problems as well as the historical and current events from which these social problems arise.

SOC 220   Group Dynamics and Counseling   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; HSW 100 or SOC 100, minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course introduces the student to using small groups to promote change. Group dynamics and developmental theory are studied in depth. Concepts such as norms, conformity, cohesion and patterns of interaction are covered. Problems such as scapegoating and triangulation are analyzed. The following competencies are taught: screening candidates; composing the group; attending to thoughts and feelings; linking; observing group process; using activities and exercises; and ethical group practice.

SOC 225   Family Social Work   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; HSW 100 or SOC 100, minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course introduces students to the theory and practice of social work with families. Students will learn how to describe American families as social systems, how to describe the structure of a family and how to identify common patterns in family functioning. Common problems and special circumstances in family functioning will be addressed. Students will learn to identify effective ways to engage families. Basic social work interventions with families will be described.

SOC 230   Marriage and Family   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course surveys the principles, practices and problems of: mate selection; marriage and family; and singlehood from a sociological and social-psychological perspective. Emphasis is placed on how socio-cultural changes are reshaping lifestyle choices, parenting, communicating and building and maintaining relationships. Some issues to be examined pertain to family planning, sexuality, sex education, single parenting, divorce, child and spouse abuse.

SOC 250   Juvenile Delinquency   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

The growing-up process of late childhood and adolescence from a sociological and cultural viewpoint is a focus of this class. Problems of the individual in his/her social environment, group forces which lead to maladjustment and sociological principles for working with youth from the viewpoint of parent, teacher, police and youth organization leader are analyzed.

Spanish   SPN

SPN 101   Beginning Conversational Spanish I   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

Students acquire practical early-elementary conversational skills. They develop the ability to understand and speak everyday conversational Spanish within the context of Spanish-speaking cultures and through introduction of vocabulary, basic grammatical structures and idioms. Listening activities and some reading/writing activities will be included. Students are expected to spend considerable time outside of class practicing with materials provided. This course contains material previously taught in SPN 109.

SPN 102   Beginning Conversational Spanish II   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; SPN 101 or one semester of college Spanish
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students acquire higher-level elementary conversational skills and develop the ability to understand, speak, react, and reflect using everyday standard Spanish. Through the introduction of vocabulary, grammatical structures, idioms, and real-life dramatization, the students will practice these skills. Videos will be used to introduce and reinforce the grammatical and functional content of this course. This course contains material previously taught in SPN 110.

SPN 111   First Year Spanish I   **5 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6

75 lecture, 0 lab, 0 clinical, 0 other, 75 total contact hours

This course emphasizes basic conversation tools and grammatical structures. Class work includes written, oral and audio exercises for students to develop their comprehension and communication skills. Students are expected to spend significant time studying outside of class and actively participating in class discussion. Cultural aspects of the Spanish-speaking world are also highlighted. The course is transferable to several four-year colleges.

SPN 119   Spanish Language Adventures   **1 credit**

Level I Prerequisites: Academic Reading and Writing Levels of 6
0 lecture, 0 lab, 0 clinical, 15 other, 15 total contact hours

This course of independent study can be undertaken during any of the college field trip "Adventures" to Spanish-speaking countries. Students live in the host country for the duration of the Adventure, visit and study first-hand the outstanding cultural attractions and have the opportunity to practice Spanish throughout their stay.

SPN 122   First Year Spanish II   **5 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; SPN 111 minimum grade "C" or score of 270-345 on the Spanish placement exam
75 lecture, 0 lab, 0 clinical, 0 other, 75 total contact hours

A continuation of SPN 111, this is a transferable course that emphasizes basic conversation tools and grammatical structures. Class work includes oral, written and audio exercises for students to develop their communication and comprehension skills. Cultural aspects of the Spanish-speaking world are also highlighted. Students must demonstrate SPN 111 proficiency.

SPN 201   Second Year Spanish I   **4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; SPN 122 minimum grade "C" or score of 346-427 on the Spanish placement exam
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This course emphasizes intermediate level oral and written communication. Study includes conversation and writing tools, grammatical structures, and cultural investigation and analysis. Class is interactive and participatory. Considerable work outside of class is required.

SPN 202   Second Year Spanish II   **4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; SPN 201 minimum grade "C" or score of 428 or above on the Spanish placement exam

60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This course continues intermediate level oral and written communication. Study includes conversation and writing tools, grammatical structures, cultural investigation and analysis and the interpretation and discussion of written works. Class is interactive and participatory. Considerable work outside of class is required.

SPN 205   Second Year Spanish for Business   **4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; SPN 201 minimum grade "C" or score of 428 or above on the Spanish placement exam

60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

Spanish for business is an intermediate level four-skills language and culture course designed specifically for students in their fourth semester of Spanish who have an interest in business. It will help to prepare students to be linguistically and culturally aware participants in international business in the Spanish-speaking commercial market.

SPN 211   Intermediate Conversational Spanish   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; SPN 102, SPN 122, SPN 201 or SPN 202, minimum grade "C"

Level II Prerequisites:

45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this flexibly structured course, students acquire vocabulary and expand their ability to express themselves through total student involvement in conversation practice sessions.

SPN 224   Second Year Spanish II - Literature   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; SPN 201 or SPN 202, minimum grade "C" or score of 428 or higher on the Spanish placement exam

45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This is a literature course which focuses on Latin American and Spanish short stories and poetry. Authors such as Adolfo Miller, Nicolas Guillen, Ana Maria Matute, Horacio Quiroga, Julio Cortazar, Jorge Manrique y Rosario Castellanos will be studied. The course requires in-class discussion and out-of-class writing in Spanish.

Surgical Technology   SUR

SUR 110   Introduction to Surgical Technology/Surgical Patient   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to the Surgical Technology program

45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students trace the historical development of surgical technology, identify related professional organizations, and examine the various roles and job description of a surgical technologist. Surgical conscience and its application, along with components of effective surgical teamwork are discussed. The role of the surgical technologist during the surgical procedure, surgical case management during the perioperative phase, and nonsterile assisting circulator duties are also covered. This course is designed for the entry-level surgical technologist to evaluate the prospect of surgery from the patient's perspective, with its physical, psychological, cultural and social impact. Special populations, such as pediatric patients, pregnant mothers, disabled and geriatric patients, and challenges specific to each group are also covered.

SUR 130   Surgical Asepsis/Surgical Instruments   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to the Surgical Technology program; BIO 147 minimum grade "C"

45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students will focus on the prevention of perioperative disease transmission and principles of asepsis, sterile technique, surgical conscience, disinfection and sterilization. Surgical instruments, type and function are described in this class. Proper care, handling, assembly and safety precautions related to surgical equipment and supplies will be demonstrated. Discussion of wound healing, sutures, needles, and stapling devices is also included.

SUR 170   Surgical Pharmacology   2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to the Surgical Technology program

30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

In this course, students will learn about drugs and anesthetic agents used in the care of the surgical patients. Anesthesia equipment, procedures and precautions are also included.

SUR 180   Surgical Procedures I   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; SUR 110, SUR 130 and SUR 170 minimum grade "C+"

45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students will be introduced to diagnostic and surgical procedures used in general surgery, obstetrics and gynecological surgery as well as genitourinary procedures.

SUR 181   Surgical Procedures I Clinical   2 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; SUR 110, SUR 130 and SUR 170 minimum grade "C+"

0 lecture, 0 lab, 90 clinical, 0 other, 90 total contact hours

In the lab and clinical environment, students will learn, practice and perform essential skills required in the surgical setting. Students will demonstrate pre-operative operating room preparation and perform the functions of the surgical technologist in the sterile field using aseptic techniques in the laboratory setting. Students will practice diagnostic and surgical procedures used in general surgery, obstetrics and gynecological surgery as well as genitourinary procedures.

SUR 210   Surgical Procedures II   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; SUR 110, SUR 130 and SUR 170, minimum grade "C+"

45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course students will be introduced to diagnostic and surgical procedures used in ophthalmic otorhinolaryngology, oral and maxillofacial as well as plastic and reconstructive surgeries.

SUR 211   Surgical Procedures II Clinical   **2 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; SUR 110, SUR 130 and SUR 170, minimum grade "C+"
0 lecture, 0 lab, 90 clinical, 0 other, 90 total contact hours

In the lab and clinical environment, students will learn, practice and perform essential skills required in the surgical setting. Students will demonstrate pre-operative operating room preparation and perform the functions of the surgical technologist in the clinical setting. Students will practice diagnostic and surgical procedures used in ophthalmic surgery, otorhinolaryngology surgery, oral and maxillofacial surgery as well as plastic and reconstructive surgery.

SUR 230   Surgical Procedures III   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; SUR 180, SUR 181, SUR 210, and SUR 211, minimum grade "C+"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students will be introduced to diagnostic and surgical procedures used in orthopedic surgery, peripheral vascular surgery, neurosurgery and cardiothoracic surgery.

SUR 231   Surgical Procedures III Clinical   **2 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; SUR 180, SUR 181, SUR 210, and SUR 211, minimum grade "C+"
0 lecture, 0 lab, 90 clinical, 0 other, 90 total contact hours

In the lab and clinical environment, students will learn, practice and perform essential skills required in the surgical setting. Students will demonstrate pre-operative operating room preparation and perform the functions of the surgical technologist in the clinical setting. Students will practice procedures used in orthopedic, cardiothoracic, peripheral vascular and neurosurgery.

SUR 250   Surgical Technology Seminar   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; SUR 180, SUR 181, SUR 210, and SUR 211, minimum grade "C+"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course provides a health-related work-based learning experience that enables the student to apply specialized occupational theory, skills, and concepts. This course emphasizes professional readiness.

SUR 270   Surgical Safety, Hazards and Biomedical Science   **2 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; SUR 180, SUR 181, SUR 210, and SUR 211, minimum grade "C+"
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

Hazards to the patient and healthcare workers in the OR environment are reviewed in this course. The role of the surgical technologist in the protection of self, patients, and others from hazards in the operative environment is discussed. This course provides a broad base of knowledge for the entry-level surgical technologist in the areas of computers, electricity, and robotics. As surgical equipment becomes more sophisticated, understanding the fundamental principles of these technologies is essential.

Tax   TAX

TAX 101   Income Taxes for Individuals   3 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 3 or MTH 125
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This is a beginning course in Individual Tax Return preparation covering both Federal and Michigan taxes that affect individuals. Students receive practical experience in preparation of an income tax return, both manually and using tax return computer software. The course is designed for those seeking employment as paraprofessionals in the tax field. Individuals who simply wish to understand their own taxes can benefit as well. Students must be able to work with numbers and computer applications.

Union Approved Supervision   UAS

UAS 111   Construction Supervision I: Motivating Employees   3 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to Construction Supervision program
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course provides an introduction to the study of organizational behavior and motivational theory for students enrolled in the Construction Supervision certificate and associate degree programs. The importance of understanding how motivation, personality, conflict, communication, group dynamics, and leadership are important in supervising the construction project is highlighted. Limited to active members of articulated union building trade apprenticeship programs.

UAS 122   Construction Supervision II: Supervisory Skills   3 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to Construction Supervision program and UAS 111
                              minimum grade "C", may enroll concurrently
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course is an introduction to construction project management. From the configuration of the project team through the project closeout, students will identify the supervisory skills needed for a successful construction project. Limited to active members of articulated union building trade apprenticeship programs.

UAS 210   Construction Supervision III: Legal and Personnel Aspects   3 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to Construction Supervision program and UAS 111
                              minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course is one of the series of courses for students enrolled in the Construction Supervision certificate and associate degree programs. This course introduces students to contract law, labor agreements and other legal relationships as they apply to the construction industry. Students will examine issues related to managing human resources such as recruiting, pay incentives, evaluations and training. Various aspects of career management will be highlighted. Limited to active members of articulated union building trade apprenticeship programs.

UAS 222   Construction Supervision IV: The Construction Project   3 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to Construction Supervision program and UAS 122
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students examine stakeholders of the construction project and their relationship to each other. Students will become familiar with the basic function of a construction project and how the activities performed contribute to the overall profitability and health of a project as a whole. In addition, students will gain practical and operational supervisory skills specifically in the areas of planning, organizing and leading construction projects. Limited to active members of articulated union building trade apprenticeship programs.

UAS 230   Construction Supervision V: Scheduling and Project Management   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to Construction Supervision program; UAS 210 and UAS 222, minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students are introduced to the various processes used to develop and manage the schedule of a project. Additionally, students will examine various tools used to assist in schedule development and management. Finally, students will explore the desktop scheduling software Microsoft Project. Limited to active members of articulated union building trade apprenticeship programs.

United Assoc Sprinkler Fitters   UAR

UAR 160   Introduction to Sprinkler Fitter Practices   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
0 lecture, 0 lab, 0 clinical, 0 other, 0 total contact hours

This course covers introductory topics for new Sprinkler fitter apprentices including: job safety and health, heritage in the pipe trades, and use and care of tools. Limited to United Association students.

UAR 162   Basic Drawing and Introduction to Automatic Sprinklers   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
0 lecture, 0 lab, 0 clinical, 0 other, 0 total contact hours

Basic drawing covers preparation of working drawings including orthographic projection, dimensioning, illustrating pipe threads, section views and isometric drawings. Introduction to Automatic Sprinklers includes the fundamentals of sprinkler protection and the standards governing systems. Topics also include the hazard categories specified in NFPA 13, wet and dry systems, flushing sprinkler systems and the fundamentals of inspecting and testing systems. Limited to United Association students.

UAR 164   Reading Automatic Sprinkler Piping Drawings   **2 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
0 lecture, 0 lab, 0 clinical, 0 other, 0 total contact hours

This course familiarizes the student with the drawings most often found in the sprinkler trade. Topics include standard sprinkler system drawings, common symbols and abbreviations found on the drawings. Limited to United Association students.

UAR 164R Reading Residential Blueprints for Sprinkler Systems   **2 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
0 lecture, 0 lab, 0 clinical, 0 other, 0 total contact hours

This course familiarizes the student with the drawings most often found in the residential sprinkler trade. Topics include the standard drawings used by residential sprinkler fitters and abbreviations and symbols found on those drawings. Limited to United Association students.

UAR 166   Installation of Sprinkler Systems   2 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6
0 lecture, 0 lab, 0 clinical, 0 other, 0 total contact hours

This course covers the installation regulations governing fire protection systems, which includes design, installation and testing. Other topics include the regulations with respect to piping, fittings and other appurtenances for fire protection systems. Limited to United Association students.

UAR 166R Installation of Residential Fire Sprinkler Systems   2 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6
0 lecture, 0 lab, 0 clinical, 0 other, 0 total contact hours

This course presents the detailed rules and regulations governing the design, installation and testing of automatic fire sprinkler systems. This course emphasizes the rules that sprinkler fitters must satisfy on the job and also explains the principles of older, existing systems. This course references the NFPA code manuals. Limited to United Association students.

UAR 168   Architectural Working Drawings and Blueprint Reading for Sprinkler Fitters   2 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6
0 lecture, 0 lab, 0 clinical, 0 other, 0 total contact hours

Architectural Working Drawings and Blueprint Reading covers reading the types of prints found in a complete set of working drawings. The course includes correcting or compensating for inconsistencies found in drawings. Limited to United Association students.

UAR 170   Sprinkler Water Supply and The Automatic Sprinkler   2 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6
0 lecture, 0 lab, 0 clinical, 0 other, 0 total contact hours

The Automatic Sprinkler portion of the course includes how sprinklers operate, regulations applicable to sprinklers, recognizing and installing the proper sprinkler, modifying sprinklers to address specific needs. The Water Supply portion of this course addresses water supply requirements for sprinkler systems. Topics include the relationship of occupancy classifications to water supply requirements, the installation of fire service mains, pumps, controllers, and tanks. Limited to United Association students.

UAR 170R The Residental Automatic Fire Sprinkler   2 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6
0 lecture, 0 lab, 0 clinical, 0 other, 0 total contact hours

This course covers the various types of automatic fire sprinklers including their similarities and differences. Particular emphasis is placed on the selection of the proper sprinkler and the regulations covering the use of diverse types of heads. This course references current NFPA code books. Limited to United Association students.

UAR 172   Types of Fire Protection Systems and Alarms   3 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6
0 lecture, 0 lab, 0 clinical, 0 other, 0 total contact hours

This course covers various types of fire protection systems which include wet pipe and anti freeze systems. Topics include the design principles, specification, installation and operation of fire protection systems. Limited to United Association students.

UAR 174   Special Application Sprinkler Systems and Hydraulics   3 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6
0 lecture, 0 lab, 0 clinical, 0 other, 0 total contact hours

The Special Application Sprinkler Systems course addresses a wide range of systems found in the field. The course covers: latch clapper and differential type valves, pilot line systems and preaction systems. The hydraulics portion of the course covers pressure, total force, specific gravity/density, pressure generation, flow rate, sprinkler system design, pressure loss and calculated systems. Limited to United Association students.

UAR 176   Human Relations   3 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6
0 lecture, 0 lab, 0 clinical, 0 other, 0 total contact hours

This course is an overview of the most important aspects of the role of foreman. Topics include the primary duties of the foreman, understanding what it takes to work well with others, and communicating effectively with others. Limited to United Association students.

UAR 178   Technical Writing   3 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6
0 lecture, 0 lab, 0 clinical, 0 other, 0 total contact hours

Technical Writing covers the basic reports and forms used in the fire protection industry. Topics include specific instructions on how to complete reports and forms in a manner acceptable to others in the fire protection industry. Limited to United Association students.

United Association Pipefitters   UAF

UAF 102   Introduction to Arc Welding, Soldering, and Brazing   3 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6
0 lecture, 0 lab, 0 clinical, 0 other, 0 total contact hours

This is the introductory course in welding, soldering and brazing. Topics include: safety in welding, cutting and allied processes, oxyacetylene cutting and welding, procedure for setting up oxy-fuel cutting and welding equipment. Related safety is covered in all topics. Limited to United Association students.

UAF 120   Introduction to Pipefitter Practices   3 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6
0 lecture, 0 lab, 0 clinical, 0 other, 0 total contact hours

This course is the introduction to pipefitting for new apprentices. Course topics include the heritage program, use and care of tools, pipe, fittings, valves, supports and fasteners, job safety and health and soldering and brazing. Related safety is covered in all topics. Limited to United Association students.

UAF 122   Drawing Interpretation and Plan Reading   **2 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6
0 lecture, 0 lab, 0 clinical, 0 other, 0 total contact hours

This is an introductory course in drawing and reading blueprints. Course topics include: Introduction to basic drawing tools, measuring tools, lettering skills, three-view, plan view, elevation view drawings, graphic symbols for pipe fittings and valves, interpretation of technical diagrams, piping drawings, and interpretation of building plans and building specifications. Limited to United Association students.

UAF 124   Oxy Fuel Cutting and Shielded Arc Welding   **2 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6
0 lecture, 0 lab, 0 clinical, 0 other, 0 total contact hours

This is an intermediate course in shielded metal-arc oxy-fuel cutting and welding leading to certification. Limited to United Association students.

UAF 126   Hydronic Heating and Steam Systems   **2 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6
0 lecture, 0 lab, 0 clinical, 0 other, 0 total contact hours

This course is concerned primarily with the technical aspects of design and installation of several types of hydronic systems found in the pipe trades. Topics also include information concerning the installation of high-efficiency heating and cooling systems, low and high temperature, radiant heat and solar hot water heating systems. The steam system portion of the course includes: generating steam, installing steam piping and accessories and troubleshooting all types of steam systems. Limited to United Association students.

UAF 128   Refrigeration and Electrical Controls   **2 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6
0 lecture, 0 lab, 0 clinical, 0 other, 0 total contact hours

This course covers the basic principles of air conditioning and refrigeration. The basic components of the refrigeration cycle are identified. Topics include operation and proper installation of the devices and equipment required to control the flow of refrigerant in air conditioning and refrigeration systems. Limited to United Association students.

UAF 130   Advanced SMAW Welding   **3 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6
0 lecture, 0 lab, 0 clinical, 0 other, 0 total contact hours

This advanced Shielded Metal-Arc Welding course leads to shielded metal-arc welding certification. Limited to United Association students.

UAF 132   Advanced Pipefitter Topics   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
0 lecture, 0 lab, 0 clinical, 0 other, 0 total contact hours

This course covers special topics for pipefitters. Topics may include customer relations, appearance and on-the-job conduct, and effective leadership/supervision. Related safety is included in all topics. Limited to United Association students.

UAF 134   Controls and Instrumentation   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
0 lecture, 0 lab, 0 clinical, 0 other, 0 total contact hours

The purpose of this course is to teach the fundamentals of basic electricity and the fundamentals of electrical controls found in mechanical equipment installations such as air conditioning, heating, fuel burning, water heating and refrigeration. Safety is stressed. Limited to United Association students.

UAF 136   GTAW Welding   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
0 lecture, 0 lab, 0 clinical, 0 other, 0 total contact hours

The Gas Tungsten Arc Welding (GTAW) process provides a method of joining difficult-to-weld metals. This course shows how this process has been adapted to the welding of carbon steel and stainless steel pipe. The course covers equipment, shielding gases, tungsten electrodes, etc. along with safe work practices unique to this type of welding. Limited to United Association students.

UAF 190   Accelerated Welder Training   12 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 675 lab, 0 clinical, 0 other, 720 total contact hours

The focus of this 18 week/40 hours per week course is on training a novice welder for introduction into the pipe fitting industry. Topics covered are Shielded Metal Arc Welding (SMAW), Gas Tungsten Arc Welding (GTAW), Oxy-fuel Cutting (OFC), safety, basic math, basic pipe fitting techniques, piping and related equipment and terminology. Prior to the completion of this class, the student will attend, and satisfactorily complete, an OSHA 10 course, a United Association Heritage class and a class on the UA Standard for Excellence. Enrollment in this course is limited to students identified by the UA.

United Association Plumbers   UAP

UAP 100   Introduction to Plumbing Practices   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
0 lecture, 0 lab, 0 clinical, 0 other, 0 total contact hours

This course is the introduction to plumbing for new apprentices. Course topics include the heritage program, use and care of tools, pipe, fittings, valves, supports and fasteners, job safety and health, and soldering and brazing. Related safety is covered in all topics. Limited to United Association students.

UAP 102   Introduction to Arc Welding, Soldering and Brazing   **3 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6
0 lecture, 0 lab, 0 clinical, 0 other, 0 total contact hours

This is the introductory course in welding, soldering and brazing. Topics include: safety in welding, cutting and allied processes, oxyacetylene cutting and welding, procedure for setting up oxy-fuel cutting and welding equipment. Related safety is covered in all topics. Limited to United Association students.

UAP 104   Drawing Interpretation and Plan Reading   **2 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6
0 lecture, 0 lab, 0 clinical, 0 other, 0 total contact hours

This is an introductory course in drawing and reading blueprints. Course topics include: introduction to basic drawing tools, measuring tools, lettering skills, three-view, plan view, elevation view drawings, graphic symbols for pipe fittings and valves, interpretation of technical diagrams, piping drawings and interpretation of building plans and building specifications. Limited to United Association students.

UAP 106   Oxy Fuel Cutting and Shielded Arc Welding   **2 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6
0 lecture, 0 lab, 0 clinical, 0 other, 0 total contact hours

All phases of welding are covered in this course beginning with oxyacetylene and oxy-fuel cutting and welding progressing through shielded metal-arc welding test procedures. Topics include tools, equipment, types of rod, weld positions, proper gaps, bevels and the various types of lap and butt joints. Safety is stressed throughout. Limited to United Association students.

UAP 108   Water Supply and Drainage   **2 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6
0 lecture, 0 lab, 0 clinical, 0 other, 0 total contact hours

Water supply topics include: water treatment, water mains and services, building water supply systems and hot water supply. The course provides a detailed description of the purpose and function of the various components of a water supply system. The drainage portion of this course presents the various types of drainage systems installed and maintained by pipe trades journeyworkers. The course includes: sewage disposal, sewers and drains, building drainage systems, the plumbing trap and venting the drainage system. Limited to United Association students.

UAP 110   Customer Service Techniques   **2 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6
0 lecture, 0 lab, 0 clinical, 0 other, 0 total contact hours

This training encompasses all aspects of customer service. Topics include customer relations, appearance and on-the-job conduct. Limited to United Association students.

UAP 112   Plumbing Fixtures and Appliances   3 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6
0 lecture, 0 lab, 0 clinical, 0 other, 0 total contact hours

This course presents the handling and installation of the various types of plumbing fixtures and appliances including information on accessories and fixture controls (flushmeters, faucets, etc). Limited to United Association students.

UAP 114   Plumbing Codes and Regulations   3 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6
0 lecture, 0 lab, 0 clinical, 0 other, 0 total contact hours

This course covers plumbing code construction, general use of codes and code application. Appropriate state, local, or provincial codes are reviewed. Limited to United Association students.

UAP 116   Medical Gas and Backflow Prevention Techniques   3 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6
0 lecture, 0 lab, 0 clinical, 0 other, 0 total contact hours

This course provides introduction to the concepts and procedures of Medical Gas installation. Topics include certification procedures and requirements for installers of medical gas systems, including brazer qualification. This course also presents the importance of backflow prevention and the dangers of cross connections. Topics include guidelines for acceptable testing practices, annual inspection and repair, and maintenance of backflow prevention assemblies used in modern plumbing installations. Limited to United Association students.

UAP 118   Advanced Plumbing Practices   3 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6
0 lecture, 0 lab, 0 clinical, 0 other, 0 total contact hours

This course addresses advanced plumbing practices including supervision/leadership, pipe systems design and advanced drawing procedures. Limited to United Association students.

United Association Service Tec   UAE

UAE 140   Introduction to HVACR Service Technician Practices   3 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6
0 lecture, 0 lab, 0 clinical, 0 other, 0 total contact hours

This course is the introduction to HVACR for new apprentices. Course topics include the heritage program, use and care of tools, pipe, fittings, valves, supports and fasteners and job safety and health. Related safety is covered in all topics. Limited to United Association students.

UAE 142   Soldering and Brazing   3 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6
0 lecture, 0 lab, 0 clinical, 0 other, 0 total contact hours

The preparation and joining of the cup type copper tube is covered in detail in this course both by the soldering and the brazing methods. The student is taught the proper and safe use of tools, torches, solders, filler metals and fluxes used in making a soldered/brazed joint. Related safety is included in every topic. Limited to United Association students.

UAE 144   Refrigeration   **2 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
0 lecture, 0 lab, 0 clinical, 0 other, 0 total contact hours

This is the introductory refrigeration course. Topics include basic physics, basic electricity, and the basic refrigeration cycle of reciprocal, centrifugal, rotary, screw and absorption systems. Control and sequence of operation of the above systems is included. Introduction to environmental impact of refrigerant handling is included. Related safety is covered in each topic. Limited to United Association students.

UAE 146   Air Conditioning   **2 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
0 lecture, 0 lab, 0 clinical, 0 other, 0 total contact hours

This course covers air conditioning systems, installation and service. Topics include: psychrometric properties of air, building heating and cooling load calculations, control applications, energy conservation and heat recovery, in addition to a review of basic science. Limited to United Association students.

UAE 148   Electrical Controls   **2 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
0 lecture, 0 lab, 0 clinical, 0 other, 0 total contact hours

The purpose of this course is to teach fundamental theory and operation of electric/electronic controls used in starting, stopping and cycling electro-mechanical equipment encountered in the HVACR field. Related safety is included in each topic. Limited to United Association students.

UAE 150   DC Electronics   **2 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
0 lecture, 0 lab, 0 clinical, 0 other, 0 total contact hours

This course covers the fundamentals of direct current applications in control theory and basic electronics. Limited to United Association students.

UAE 152   Advanced Electrical Controls and Pneumatic Controls   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
0 lecture, 0 lab, 0 clinical, 0 other, 0 total contact hours

The pneumatic controls portion of the course is a presentation of basic pneumatic control principles. Theory of operation, basic principles and troubleshooting are included. Related safety is included in each topic. Limited to United Association students.

UAE 154   Advanced Air Conditioning and Refrigeration   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
0 lecture, 0 lab, 0 clinical, 0 other, 0 total contact hours

This course presents special topics in air conditioning and refrigeration. Topics may include introduction to building automation, load calculations, duct sizing, Universal CFC certification and air distribution. Limited to United Association students.

UAE 156   Air and Water Balancing and Motor Alignment   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
0 lecture, 0 lab, 0 clinical, 0 other, 0 total contact hours

This course covers principals of balancing forced air systems, balancing flow in hydronic loops, pumps, principles of alignment and vibration elimination. Limited to United Association students.

UAE 158   Advanced HVACR Practices   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
0 lecture, 0 lab, 0 clinical, 0 other, 0 total contact hours

Special topics covered in this course may include advanced building automation, leadership/supervision, customer relations, importance of clear and concise reporting (work orders) and safety. Limited to United Association students.

UAE 165   Accelerated HVACR Training   12 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
60 lecture, 660 lab, 0 clinical, 0 other, 720 total contact hours

This is an accelerated HVACR course that will prepare the UA apprentice to start his or her career in the HVACR service and installation field. HVACR tools, air conditioning, refrigeration, heat, combustion process, soldering, brazing, electrical theory, electrical motors, HVACR controls, refrigerant handling, and safety will be covered. The student is expected to pass OSHA 10 certification, first aid certification, CFC certification, R410-A certification, UA 51 certification brazing test, and the UA STAR residential and light commercial test. Enrollment in this course is limited to students identified by the UA.

UAE 210   Advanced Electronics and DDC Systems   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course will present advanced control theory concepts and provide a thorough understanding of the operation of commercial controls for HVACR systems. Due to the complexity and proprietary nature of Direct Digital Control (DDC) systems, both generic and specific information on DDC systems will be introduced and studied. A basic introduction to DDC and the terms used in the industry will be followed with detailed information of DDC system architectures, hardware components and software requirements. Comprehensive specific information regarding input and output types and the processes of DDC systems will be covered. Limited to United Association students.

UAE 220   Environmental Technology in HVACR   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In today's environmentally conscious business climate, many industries are looking to ensure that their business is reducing their impact on the environment. The HVACR industry is poised to make considerable contributions to reducing these impacts. This course will discuss the utilization of sustainable and environmental "green" technologies in the HVACR field. There will be discussion on the general concepts and practical applications regarding the proper use of these technologies within the HVACR industry. In addition, discussion will occur on the increasing use of sustainable products and their use in the HVACR field. Limited to United Association students.

United Association Training   UAT

UAT 110   UA/MCA Foreman Certification   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course covers methods of teaching about becoming a foreman. With the UA and the Mechanical Contractors' Association (MCA) recognizing the need for effective leaders, this course introduces current and potential foremen to the topics that are critical in the workplace. It focuses on leadership functions, commitment, people skills, communications, teamwork and organization. Students will be strongly urged to implement this Foreman Certification Program at the local union level. Limited to United Association program participants.

UAT 110C Canadian Foreman Certification   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course is designed to certify the participants as Canadian Foreman Certification Instructors. The program provides instructors with the information and ability to present material to enable student journeypersons to move into supervisory roles in the Union construction industry. This course will provide the tools for the instructors to prepare their students for the transition to leadership roles and initial supervisory skills needed to complete the requirements of the position. Limited to United Association program participants.

UAT 111   Introduction to Industrial Teacher Training   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to Industrial Training program
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course will focus on the principles of learning, elements of trade teaching and the methods of teaching an applied technical skill. Limited to United Association program participants.

UAT 121   Industrial Teacher Training II   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to Industrial Training program
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course will focus on developing instructional objectives, planning and presenting related information lessons and the methods of teaching a second applied technical skill. Limited to United Association program participants.

UAT 131   Industrial Teacher Training III   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to Industrial Training program
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course will focus on the development of written tests, an elective professional skill and a third teaching demonstration in a technical skill area. Limited to United Association program participants.

UAT 141   Industrial Teacher Training IV   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to Industrial Training program
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course will focus on discussion and interaction techniques, an elective professional skill and the teaching methods in a fourth technical skill area. Limited to United Association program participants.

UAT 151   Industrial Teacher Training V   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to Industrial Training program
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course will focus on innovations and problems in trade teaching, an elective professional skill and methods of teaching in a fifth technical skill area. Limited to United Association program participants.

UAT 161   Technical Seminar   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to Industrial Training program
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course will focus on the methods of teaching a technical skill area. Special approval required and will replace UAT 121, 131, 141, or 151. Limited to United Association program participants.

UAT 171   Professional Seminar   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to Industrial Training program
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course will focus on instructional methodology and practices for the trade-related instructor. Special approval required and will replace UAT 121, 131, 141, or 151. Limited to United Association program participants.

UAT 201   Advanced Instructor Training I   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
Level II Prerequisites: UAT 151
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course is designed for graduates of the 5-year UA instructor training program. Trade teachers will expand their skills and knowledge in teaching techniques and methodologies, as well as technological concepts. The student will select one 45 hour module or two 22 1/2 hour modules from unit one or unit two. Limited to United Association program participants.

UAT 202   Advanced Instructor Training II   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
Level II Prerequisites: UAT 151
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course is designed for graduates of the 5-year UA instructor training program. Trade teachers will expand their skills and knowledge in teaching techniques and methodologies, as well as technological concepts. The student will select one 45 hour module or two 22 1/2 hour modules from unit one or unit two. Limited to United Association program participants.

UAT 203   Advanced Instructor Training III   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
Level II Prerequisites: UAT 151
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course is designed for graduates of the 5-year UA instructor training program. Trade teachers will expand their skills and knowledge in teaching techniques and methodologies, as well as technological concepts. The student will select one 45 hour module or two 22 1/2 hour modules from unit one or unit two. Limited to United Association program participants.

UAT 204   Advanced Instructor Training IV   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
Level II Prerequisites: UAT 151
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course is designed for graduates of the 5-year UA instructor training program. Trade teachers will expand their skills and knowledge in teaching techniques and methodologies, as well as technological concepts. The student will select one 45 hour module or two 22 1/2 hour modules from unit one or unit two. Limited to United Association program participants.

UAT 205   Advanced Instructor Training V   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
Level II Prerequisites: UAT 151
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course is designed for graduates of the 5-year UA instructor training program. Trade teachers will expand their skills and knowledge in teaching techniques and methodologies, as well as technological concepts. The student will select one 45 hour module or two 22 1/2 hour modules from unit one or unit two. Limited to United Association program participants.

UAT 207   Using UA Resources   1.5 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 0 lab, 0 clinical, 0 other, 22.5 total contact hours

The focus of this course is to provide students with the knowledge and skills to use technology to teach with Blackboard and Microsoft Office and to use everything available to them through UANET. This course will focus on the apprentice registration process, the UA Smart System and state and federal grants. Students taking this course should have a working knowledge of how to operate a computer. Limited to United Association program participants.

UAT 210   Public Speaking   1.5 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6
20 lecture, 2.5 lab, 0 clinical, 0 other, 22.5 total contact hours

This course is designed to help students acquire essential speaking and listening skills for the classroom. In-class exercises focus on the delivery of lecture material and conducting demonstrations. Students polish organization and delivery skills, as well as gain a heightened awareness of the relationship between a speaker and an audience. Students are encouraged to bring materials from classes they are currently teaching as reference for class exercises. Limited to United Association program participants.

UAT 211   Trade Teaching Overview   1.5 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 0 lab, 0 clinical, 0 other, 22.5 total contact hours

This introductory professional course provides students with an understanding of trade education in the American education system, goals of trade education, the uniqueness of trade education, and the responsibilities good trade teachers have in structuring a learning environment where change takes place. Students will recognize differences in learning outcomes, and design instruction to meet different learning needs. Limited to United Association program participants.

UAT 212   Structures for Learning   1.5 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 0 lab, 0 clinical, 0 other, 22.5 total contact hours

This course covers methods of teaching about structured learning. The purpose of this course is to provide tools to help UA instructors develop new courses or modify existing ones. The course focuses on: the purposes of trade education; the role of setting objectives for daily instruction; the nature of behavioral objectives; identifying the elements of behavior/skills; identifying consistent standards of performance; and the principles of evaluating learner progress. Limited to United Association program participants.

UAT 213   Planning and Presenting Lessons   1.5 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 0 lab, 0 clinical, 0 other, 22.5 total contact hours

This course covers methods of teaching about planning and presenting two types of lessons: skills and information. Students will learn to use traditional and UA electronic resources for planning lessons, managing courses and teaching. Students will learn to choose methods, techniques and technologies appropriate to a particular class and situation. Working together, students will develop a lesson plan, deliver a brief lecture and demonstrate a task. Limited to United Association program participants.

UAT 214   Techniques in Classroom Interaction   1.5 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 0 lab, 0 clinical, 0 other, 22.5 total contact hours

This covers methods of teaching teachers about how to create interactive classroom discussions and the techniques associated with developing individualized instruction. Topics include: the process of creating interactive discussions in trade teaching; guidelines for conducting classroom discussions; issues related to group dynamics; and concerns about teaching a diverse group of students. Limited to United Association program participants.

UAT 215   Problem Solving in Trade Teaching   1.5 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6
12 lecture, 4 lab, 0 clinical, 6.5 other, 22.5 total contact hours

This course covers methods of teaching problem resolution and innovation implementation in the local UA school. Topics include analyzing and solving teaching problems, recognizing student learning disabilities, evaluating student performance and implementing innovative solutions in the local school. Students should come prepared to share innovative ideas from their local school. Limited to United Association program participants.

UAT 219   Introductory ATR Training   3 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6
35 lecture, 0 lab, 0 clinical, 10 other, 45 total contact hours

This course covers methods of teaching about the fundamentals of the UA Welder Certification Program. Participants will be able to perform the duties and responsibilities of an authorized testing representative (ATR) as defined in the program, from administrative functions to performing visual inspections of welded coupons to determining their acceptability and verifying compliance of radiographic examinations. Limited to United Association program participants.

UAT 220   Pipe Trades Applied Mathematics   1.5 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6
12 lecture, 0 lab, 0 clinical, 10.5 other, 22.5 total contact hours

This course covers methods of teaching about pipe trades applied mathematics. Topics to be covered include: teaching styles and methods, creating exam questions and applying mathematics to the plumbing and pipefitting industry. There will be a refresher on some important math functions, such as offsets, metric systems and calculator usage. On the final day of class, students will be required to demonstrate a basic math lesson to the class. Limited to United Association program participants.

UAT 221   Gas and Oil Burner Service   1.5 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6
12 lecture, 0 lab, 0 clinical, 10.5 other, 22.5 total contact hours

This course covers methods of teaching about gas and oil burner service. Topics to be covered include: gas installations, gas and oil burner design flame safeguard controls, and burner set-up, maintenance and repair. Curriculum presentation techniques, application of ideas to local classroom situations, and training mock-ups will also be discussed. On the final day of class students will be required to give a basic presentation to the class. Limited to United Association program participants.

UAT 222   Basic Computer for the Trade Teacher   1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 0 lab, 0 clinical, 0 other, 22.5 total contact hours

This course introduces the basics of computers. Students will learn to produce documents using a word processor, create electronic spreadsheets to help prepare budgets and manage numerical information, prepare presentation graphics and learn search techniques on the Internet. Topics include: hardware and software, Windows operating system, Word, spreadsheet, creating course handouts, PowerPoint and Internet navigation. Limited to United Association program participants.

UAT 223   Centrifugal Water System Analysis   1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
12 lecture, 10.5 lab, 0 clinical, 0 other, 22.5 total contact hours

This course covers methods of teaching about the theoretical and practical analysis of various chilled water systems. A thorough review of P/E diagrams, basic thermodynamics and system design will be covered. Troubleshooting of common problems found in chilled water systems will be discussed as well as refrigerant handling, recovery, maintenance and operation. Limited to United Association program participants.

UAT 224   OSHA for the Construction Industry   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course covers methods of teaching about OSHA standards. The course is designed for "new" students only and emphasis will be placed upon those areas in construction that are most hazardous. OSHA standards that apply to the construction industry will be used as a guide. Students will be briefed on effective instructional approaches and the effective use of visual aids and handouts. After completion of course, students will receive a certificate from the Department of Labor. Limited to United Association program participants.

UAT 225   Plumbing Fixtures   1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
12 lecture, 0 lab, 0 clinical, 10.5 other, 22.5 total contact hours

This course covers methods of teaching about the various types of plumbing fixtures. Topics to be covered include: the history of plumbing fixtures; the theory of design; the principles of installation and operation of these fixtures; the fixture controls; and related appliances. Students taking this class should have a working knowledge of plumbing fixtures. Limited to United Association program participants.

UAT 226   PowerPoint for Instructors   1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; UAT 222
22.5 lecture, 0 lab, 0 clinical, 0 other, 22.5 total contact hours

Microsoft PowerPoint is a flexible tool for creating and delivering class presentations and handouts. This course will cover methods in developing instructional presentations and related student materials. Basic topics will include adding text, selecting appropriate fonts and colors, inserting graphics, using master slides and displaying a slide show. Advanced topics will include adding tables and charts, inserting hyperlinks, adding animations, customizing slide shows and using the drawing tools. This is a hands-on computer class. Limited to United Association program participants.

UAT 227   Geothermal Heat Pump Installation   **1.5 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 0 lab, 0 clinical, 0 other, 22.5 total contact hours

This training session will provide the necessary skills to train your local members as IGSHPA certified installers. This training emphasizes the importance of the effort in bringing energy independence and environmental security to our nation by installing this renewable space conditioning system. Upon completion of this training program and the passing of the required exam, a card and certificate will be issued to the student instructor certifying them as an UA/IGSHPA certified installer trainer. Limited to United Association program participants.

UAT 228   Online Teaching Techniques   **1.5 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
7.5 lecture, 15 lab, 0 clinical, 0 other, 22.5 total contact hours

This course covers the use of the Internet as a teaching tool. Forums, chat rooms, online testing, online assignments, using external links and other Internet features will be explained and demonstrated. Methods for converting traditional class materials into an online format will be emphasized. Procedures and standards for class page creation and maintenance will be presented. Students will have hands-on practice in creating online course materials. Students taking this course should be familiar with using an Internet browser and must have an email account. Limited to United Association program participants.

UAT 229   Introduction to Variable Frequency Drives   **1.5 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 0 lab, 0 clinical, 0 other, 22.5 total contact hours

This course covers methods of teaching about how to provide the Local Union instructor with the necessary presentation materials and teaching techniques to introduce a Variable Frequency Drives (VFD) class in their curriculum. Students taking this course should have a good knowledge base of controls and AC induction motors and be working in the HVAC service field. Installation, setup/programming and troubleshooting techniques will be covered. Limited to United Association program participants.

UAT 230   3D Computer-Aided Drafting (CAD)   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
20 lecture, 25 lab, 0 clinical, 0 other, 45 total contact hours

This course covers methods of teaching about 3D Computer Aided Drafting (CAD). Topics to be covered include: the 3D CAD environment; creation of 3D piping; 3D pipefittings and other complex solids; creating surfaces; editing solids; and utilizing AutoCAD and Quickpen Pipe Designer 3D software. Limited to United Association program participants.

UAT 231   UA Green Awareness Certification   **1.5 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 0 lab, 0 clinical, 0 other, 22.5 total contact hours

This course covers methods of teaching about "Green" awareness. It emphasizes concepts and principles related to the specification, purchase and application of energy efficient products. Upon successful completion of this course and certification exam, students will receive a certification that attests to their knowledge of the emerging trends, terminologies, systems and products that are considered green. Limited to United Association program participants.

UAT 232   Drainage   1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
12.5 lecture, 10 lab, 0 clinical, 0 other, 22.5 total contact hours

This course covers methods of teaching about drainage. Topics to be covered include: history of the plumbing system; private and public sewage disposal systems; sewers and drains; grading; compaction; building drainage systems; the plumbing trap; and venting the drainage system. Limited to United Association program participants.

UAT 233   CAD for the Piping Trade   1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 0 lab, 0 clinical, 0 other, 22.5 total contact hours

This course covers methods of teaching about the efficient and productive implementation of computer-aided drafting to the piping drawing production environment. Utilizing AutoCAD software, issues relating to maximizing the efficiency of on the job CAD drawing production are addressed, such as configuration of peripheral equipment and AutoCAD software configuration. Students taking this course should have working knowledge of basic drafting. Limited to United Association program participants.

UAT 233B Introduction to Building Information Modeling (BIM)   1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
7.5 lecture, 15 lab, 0 clinical, 0 other, 22.5 total contact hours

This course explores the critical aspects of Building Information Modeling (BIM) as applied to piping coordination, fabrication and installation within the piping model production environment. Utilizing AutoCAD software, NavisWorks Manage software and Quickpen Pipe Designer 3D software, issues relating to the processes and procedures relating to on the job application of the BIM piping model are explored within the three-dimensional environment. Topics include three-dimensional model production, simultaneous production tasking, coordination clash detection, pre-fabrication applications and electronic transfer of virtual layouts to real world installations (Total Station). Students should have a basic understanding of CAD. Limited to United Association program participants.

UAT 234   Online Recruiting and Promotion   1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
12 lecture, 0 lab, 0 clinical, 10.5 other, 22.5 total contact hours

This course will demonstrate how to create a local union Web site, promote the local union through radio, television and the Internet for the purpose of advertising and mass media recruiting. Upon completion of this course, the instructor will have created a working Web site for their local union, will have purchased their own domain name (dot-com address), and have their site published on the World Wide Web. The instructor will have gained sufficient knowledge to publish a complete dynamic Web site. Instructors will also be exposed to various strategies for promoting their local union, and learn about recruiting using the Internet and mass media. Limited to United Association program participants.

UAT 235   Power Piping   1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
18 lecture, 0 lab, 0 clinical, 4.5 other, 22.5 total contact hours

This course covers methods of teaching about the fundamentals in the design of ASME B31.1 Power Piping. It focuses on the installation of proper pipings, pipe supports, history of the ASME codes, material science, mechanical behaviors, piping metallurgy, welding metallurgy, metal failures and proper material acquisitions. Basic fossil-fired plant steam-water cycle, feed-water cycle and piping hanging loads will be covered. Limited to United Association program participants.

UAT 236   Coyne First Aid for the Trades   1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
12.5 lecture, 2 lab, 0 clinical, 8 other, 22.5 total contact hours

This train-the-trainer course will certify the student instructors to teach/conduct the Coyne basic life support/first aid training program. Topics to be covered include: providing basic life support for adults, infants and children; performing first aid for musculoskeletal injuries and burns; using the automated external defibrillator; and administering proper care in diabetic emergencies, seizures and near drowning. Limited to United Association program participants.

UAT 237   Geothermal Certification   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This train-the-trainer course will certify the student instructors to teach geothermal heating and cooling. Topics to be covered include: principles of geothermal heating and cooling; design and material options; energy independence; and environmental security. Upon completion of the training program and passing the exam, students will be issued IGSHPA accreditation and be certified as a UA/IGSHPA trainer/installer. Limited to United Association program participants.

UAT 238   Methods of Teaching Downhill Welding   1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
12 lecture, 10.5 lab, 0 clinical, 0 other, 22.5 total contact hours

This course is designed for the welding instructor who will be teaching apprentices and journey workers in the technique of Downhill Welding. The welding instruction will be given on large diameter pipe. Classroom instruction on how and what to teach will be presented. This class will include joint preparation, line up on coupons and hands-on welding. Limited to United Association program participants.

UAT 239   AWS-CWI Certified Welding Inspector   4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 15 lab, 0 clinical, 0 other, 60 total contact hours

This is an intensive seven day course designed to prepare a candidate to successfully complete the American Welding Society (AWS) Certified Welding Inspector (CWI) Examination. Limited to United Association program participants.

UAT 240   Applied Electrical Fundamentals   1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
12 lecture, 0 lab, 0 clinical, 10.5 other, 22.5 total contact hours

This course covers methods of teaching about applied electrical fundamentals. It deals with the application of the fundamental electrical principles to the electrical controls commonly used in the pipe trades. How to use simple test equipment safely will be stressed as the students learn to make checks on circuits and to measure voltage, amperage and resistance. Limited to United Association program participants.

UAT 241   Advanced Water Supply   **1.5 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 0 lab, 0 clinical, 0 other, 22.5 total contact hours

This course covers methods of teaching about advanced potable hot water and water supply. The focus of the course is to provide students with a background in water supply and the installation and maintenance of domestic water heating equipment. Topics to be covered include: water mains and services; building water supply systems; and cross connections, valves and pumps. Limited to United Association program participants.

UAT 242   Advanced Centrifugal Water Chillers   **1.5 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
12 lecture, 0 lab, 0 clinical, 10.5 other, 22.5 total contact hours

This course covers methods of teaching about centrifugal overhaul procedures, precision measuring techniques, teardown techniques, start-up and chiller analysis. Compressor component functionality will be stressed in order to give the student a good working knowledge of centrifugal compressor design and operation, including a step-by-step centrifugal teardown procedure. There will be 2 days of hands-on training at which time a centrifugal compressor shall be completely disassembled and rebuilt. Limited to United Association program participants.

UAT 243   Operation of the Green Trailer   **1.5 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
12 lecture, 10.5 lab, 0 clinical, 0 other, 22.5 total contact hours

Instructors taking this class will learn how to present classes covering the basics of Sustainable (Green) Technology as it applies to the mechanical and plumbing systems installed and serviced by UA members. Students will learn best practices for teaching with the Hampden Green Training equipment on the UA Green Training Trailer. Trailer and equipment safety, proper trailer setup, operation of the onboard generator, rear projection system, fuel, electrical and water hookup will be covered. Some of the training demonstrators onboard the trailer are: fuel cell trainer, wind power generation, green plumbing system trainer, solar heating system, solar photovoltaic system, geothermal system trainer and a high efficiency gas furnace. UA Green Training Trailer event scheduling and transportation policies will be covered. Limited to United Association program participants.

UAT 243B Operation of the UA Welding Trailer   **1.5 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 0 lab, 0 clinical, 0 other, 22.5 total contact hours

The purpose of this course is to instruct the student in the methods and techniques utilized in the site selection, transport, installation of required utilities and equipment operation and maintenance for the UA Welding Training Trailer. Upon completion of the course, the student will be able to request the trailer, take receivership (setup and pack for shipping), give tours of the trailer and provide training at the local union facility. The training will also involve operation of welding equipment, tools and video training devices installed in the trailer. Limited to United Association program participants.

UAT 243C UA Pipe Trades Trailer Operations   **1.5 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 0 lab, 0 clinical, 0 other, 22.5 total contact hours

The purpose of this course is to instruct the student in the methods and techniques utilized in the site selection, transport, installation of required utilities and equipment operation and maintenance of the UA pipe trades training trailers. The trade trailers are outfitted with the very latest equipment utilized in the plumbing, pipefitting, HVAC and sprinkler fitting industries for the purpose of training apprentices and journey persons of the United Association. Limited to United Association program participants.

UAT 243D Residential Plumbing Demo Training Trailer   **1.5 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
7.5 lecture, 15 lab, 0 clinical, 0 other, 22.5 total contact hours

The Plumbing Service Demonstration Training Trailer course will provide training on the use of the UA's newest training trailers. The plumbing Service Demonstration Training Trainer is designed to highlight the variety of plumbing services that UA Signatory Contractors provide and the training UA Plumbing Service Professionals receive to do that work. Also included is the use of the new Plumbing Service Trainer Trailer which provides several portable modules loaded in a 53' semi-trailer for use by local training centers for immediate Plumbing Service Training. This class is a prerequisite for the local's use of the trailers. Limited to United Association program participants.

UAT 244   Fund of Variable Frequency Drives   **1.5 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
12 lecture, 10.5 lab, 0 clinical, 0 other, 22.5 total contact hours

This course will provide the local union instructor with the necessary presentation materials and teaching techniques to introduce a VFD class in their curriculum. Students taking this course should have a good knowledge base of electrical controls and AC induction motors, and be working in the HVAC service field. Each participant will receive ample literature in PDF format, multiple power point presentations and a detailed course outline. Installation, setup/programming and troubleshooting techniques will be covered along with associated hands-on. Limited to United Association program participants.

UAT 245   Teaching with Exam View   **1.5 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
16 lecture, 6.5 lab, 0 clinical, 0 other, 22.5 total contact hours

This course teaches best practices of how to use Exam View test creation software. Instructors will create and administer classroom and on-line quizzes and exams using supplied question banks. There will be a demonstration on creating question banks based on the assignments which correspond to UA textbooks. Students will learn how to convert their existing testing material into the Exam View format. Converting tests for use with Blackboard on-line classes will also be covered. Limited to United Association program participants.

UAT 246   Concepts of Controlled Bolting   **1.5 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
12 lecture, 10.5 lab, 0 clinical, 0 other, 22.5 total contact hours

This course trains instructors in teaching concepts of achieving integrity in a bolted joint. The bolted flange assembly continues to be the most overlooked piece of equipment in a piping system. Although much preparation goes into commissioning a piping system, little thought goes into tightening the joints in a controlled fashion. This course presents the theory of how a bolted connection works dynamically as a piece of equipment, the calculations required to tighten a flange to insure maximize joint life and integrity and the practical means to achieve preload including the use of hydraulic torque wrenches and hydraulic bolt tensioners. Limited to United Association program participants.

UAT 247   ASME B31.1 Code   **1.5 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
12 lecture, 0 lab, 0 clinical, 10.5 other, 22.5 total contact hours

This course covers methods of teaching about ASME B31.1 Power Piping Code. Topics include: B31.1 scope, code history, material selection and use, fabrication rules and their bases, inspection, weld & base metal discontinuities, NDE and testing requirements. Provide examples of problems that develop from not understanding the Code requirements. Cover the development of Quality Control Manuals for Code use, and the application for an ASME Pressure Piping Stamp and its renewal requirements. Limited to United Association program participants.

UAT 248   Valves   **1.5 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6
12.5 lecture, 10 lab, 0 clinical, 0 other, 22.5 total contact hours

This course covers methods of teaching about plumbing and pipefitting valves. Topics to be covered include: valve designs, valve functions, multi-turn valves, check valves, ball valves, butterfly valves and typical valve failures. The material of valve construction and the specifications and standards governing their construction and use will also be discussed. Students taking this course should have a working knowledge of valves. Limited to United Association program participants.

UAT 249   Methods in Teaching Arc Welding   **1.5 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6
12.5 lecture, 0 lab, 0 clinical, 10 other, 22.5 total contact hours

This course covers methods of teaching about the fundamental theories and practical applications of arc welding. Topics to be covered include: principles of basic welding, metallurgy, shielded metal arc welding, gas tungsten arc welding, gas metal arc welding, flux core arc welding and Oxyfuel cutting. Students taking this course should have working knowledge of arc welding. Limited to United Association program participants.

UAT 250   Advanced Applied Drawing   **1.5 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6
15 lecture, 7.5 lab, 0 clinical, 0 other, 22.5 total contact hours

This course covers methods of teaching about advanced plan reading and related drawing. Topics to be covered include: principles of drawing, proper drawing techniques, sleeve and piping sketches, coordinated drawing, deck layout and piping systems design. Limited to United Association program participants.

UAT 251   Related Science   **1.5 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6
12.5 lecture, 10 lab, 0 clinical, 0 other, 22.5 total contact hours

This course covers methods of teaching about the principles of science for plumbing and pipefitting tradespeople. Topics to be covered include: properties and characteristics of water and steam, hydraulics and pneumatics, mechanics, metals, alloys, synthetics and corrosion. This course is designed to assist students with generating ideas for their own classrooms and understanding the science related to both the plumbing and pipefitting trades. Limited to United Association program participants.

UAT 252   Introduction to Computer-Aided Drafting   **3 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course is designed as an introduction to computer-aided drafting (CAD) and the CAD environment. Emphasis is placed upon the fundamentals of CAD software and the creation of two-dimensional CAD piping drawings. AutoCAD drafting software and Windows 2000 or Windows XP operating systems are utilized. It is suggested that each student bring a USB thumb drive to use with this course. Limited to United Association program participants.

UAT 253　Copper Piping Systems　　　　　　　　　　1.5 credits

Level I Prerequisites:　Academic Reading and Writing Levels of 6
12.5 lecture, 10 lab, 0 clinical, 0 other, 22.5 total contact hours

This course covers methods of teaching about the copper piping systems. Topics to be covered include: copper production; standards and codes regulating the manufacture, specification and installation of copper systems; soldering and brazing of copper to copper and copper to dissimilar metals; alternative joining systems including roll-grooving, press-connect, push-connect and mechanically formed tees; and installation-related field failure troubleshooting and prevention. Limited to United Association program participants.

UAT 254　Centrifugal Water Chiller Controls　　　　　1.5 credits

Level I Prerequisites:　Academic Reading and Writing Levels of 6
12 lecture, 0 lab, 0 clinical, 10.5 other, 22.5 total contact hours

This course covers methods of teaching about centrifugal water chiller - controls, including electrical and electronic applications. It covers the fundamentals of microprocessors in relation to control of solid state starters, frequency drives and control systems associated with centrifugal water chillers. Carrier, Trane, and York demonstrator panels and labs will be utilized for hands-on training. Those attending should have knowledge of refrigeration principles. Limited to United Association program participants.

UAT 255　Fundamentals of Rigging　　　　　　　　　1.5 credits

Level I Prerequisites:　Academic Reading and Writing Levels of 6
12 lecture, 0 lab, 0 clinical, 10.5 other, 22.5 total contact hours

This course covers methods of teaching about the basic fundamentals of rigging. Topics to be covered include: rigging safety in basic knots and their uses, wire ropes, web slings and their applications in the trades. Also, signaling methods and practical, safe uses in every day installations in the piping industry will be discussed. Limited to United Association program participants.

UAT 256　Pneumatic Controls　　　　　　　　　　　1.5 credits

Level I Prerequisites:　Academic Reading and Writing Levels of 6
14.5 lecture, 8 lab, 0 clinical, 0 other, 22.5 total contact hours

This course covers methods of teaching about the fundamentals of pneumatic control. Topics to be covered include: basic control theory and definition; control loops and the air supply; control valves; velocity reset control; calibration; single and dual thermostats; transmitters; auxiliary devices; single and dual receiver controls; and control dampers. Limited to United Association program participants.

UAT 257　Hydronic Heating and Cooling　　　　　　　1.5 credits

Level I Prerequisites:　Academic Reading and Writing Levels of 6
12 lecture, 0 lab, 0 clinical, 10.5 other, 22.5 total contact hours

This course covers methods of teaching about hydronic heating and cooling. Topics include: low pressure boilers, heat exchangers, system controls and accessories, one, two, three and four pipe systems, two-way and three-way control valves, centrifugal pumps and pump curves, system curves, primary and secondary pumping, balancing, venting, zoning, water chillers, chilled and condenser water systems, cooling towers and water source heat pump systems. Limited to United Association program participants.

UAT 258   Advanced Residential Plumbing   **1.5 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
15 lecture, 7.5 lab, 0 clinical, 0 other, 22.5 total contact hours

This course covers methods of teaching about advanced residential plumbing. Topics to be covered include: multi-unit housing installations, phases of work, job planning, layout, prefabrication, tools and equipments, residential work advantages, myths about residential plumbing and residential service. Students taking this course must have experience in the plumbing field. Limited to United Association program participants.

UAT 259   Backflow Repair and Maintenance   **1.5 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
15 lecture, 7.5 lab, 0 clinical, 0 other, 22.5 total contact hours

This course covers methods of teaching about the repair and maintenance of large diameter backflow assemblies from various manufacturers. The main topics covered include troubleshooting and repairing the assemblies and following appropriate safety measures. Students who wish to be certified as "Backflow Repair and Maintenance Instructors" must receive a passing grade on the written and practical examinations, and must have a current backflow prevention certificate. Limited to United Association program participants.

UAT 260   Advanced Steam Technology   **1.5 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
20 lecture, 2.5 lab, 0 clinical, 0 other, 22.5 total contact hours

This course covers methods of teaching about advanced steam technology. Topics to be covered include: behavior of steam and condensate; removing condensate; air and non-condensable gases; piping design considerations; live steam; operation of steam traps; and heat exchange coils. Limited to United Association program participants.

UAT 261   Thermoplastic Fusion   **1.5 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
11 lecture, 11.5 lab, 0 clinical, 0 other, 22.5 total contact hours

This course covers methods of teaching about thermoplastic fusion. Topics to be covered include: thermoplastic fusion technology and methods used in the semiconductor, pharmaceutical and chemical processing industries; hands-on operation of the IR (infrared) 63, IR 225, BCF Plus and socket fusion machines; and the Weld Inspection Program. Students taking this course are expected to wear appropriate work clothes. Limited to United Association program participants.

UAT 262   Pipe Trades Advanced Drawing   **1.5 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
7.5 lecture, 15 lab, 0 clinical, 0 other, 22.5 total contact hours

This course covers methods of teaching about pipe trades applied drawing. Topics to be covered include: three view, plan view and elevation view drawings; graphic symbols for pipe fittings and valves; interpretation of technical diagrams and piping drawings; and building specifications. Limited to United Association program participants.

UAT 263   Fundamentals of Building Automation   1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
15 lecture, 7.5 lab, 0 clinical, 0 other, 22.5 total contact hours

This course covers methods of teaching about the basic fundamentals of direct digital control. An overview of different building automation system applications, as applied to the HVAC & R industry, will supply students with the necessary information to be knowledgeable about this topic. Students attending this course should have HVAC & R control experience. Limited to United Association program participants.

UAT 264   Electronic Controls   1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
16 lecture, 6.5 lab, 0 clinical, 0 other, 22.5 total contact hours

This course covers the basic fundamentals of electronic controls pertaining to the HVAC industry and the commercial and industrial refrigeration industries. The objective of the course is to familiarize students with the application and teaching principles of electronic controls commonly used in the pipe trades industry. Students taking this course should have knowledge of electrical controls and should currently work in the air conditioning and refrigeration fields. Limited to United Association program participants.

UAT 265   HVACR Apprenticeship Practicum   1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
15 lecture, 7.5 lab, 0 clinical, 0 other, 22.5 total contact hours

This course covers methods of teaching the Five-Year Heating, Ventilating, Air Conditioning and Refrigeration apprentice training program. Special emphasis is placed on how to teach aspects of classroom instruction. The use of pressure-enthalpy diagrams will be stressed. This course will also prepare students to reach an introductory HVAC & R familiarization course to apprentices and journey-people who have limited HVAC & R experience. Limited to United Association program participants.

UAT 266   Air and Water Balance   1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
15 lecture, 4 lab, 0 clinical, 3.5 other, 22.5 total contact hours

This course covers methods of teaching about air and water balance. The principles of heat transfer and fluid flow as related to hydronic balancing and system performance as well as electrical testing and measurement will be covered. The application and operation of system components such as fans, pumps, duct systems and hydronic piping systems will also be discussed. Limited to United Association program participants.

UAT 267   Advanced HVAC & R Troubleshooting   1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
17 lecture, 4 lab, 0 clinical, 1.5 other, 22.5 total contact hours

This course covers methods of teaching about Electrical and Refrigerant Controls as they apply to heating ventilation, air conditioning and refrigeration technologies. This course demonstrates the use of the psychrometric properties of air in practical troubleshooting applications and various skills will be demonstrated in the classroom and on working equipment. Several psychrometric charts will be presented to clarify theory and practical applications. Limited to United Association program participants.

UAT 268   Technical Classes for Sprinkler Fitters   1.5 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6
18 lecture, 0 lab, 0 clinical, 4.5 other, 22.5 total contact hours

This course covers methods of teaching about the mechanics, protocols and proper techniques of sprinkler fitting. It also addresses how to adapt to the various codes and product changes in the fire sprinkler industry. Other topics to be covered include: fire sprinkler alarms, fire sprinkler spray patterns, sprinkler inspections, lift training, technical changes to NFPA and water mist. Students who wish to be enrolled in this course must have prior experience with sprinkler fitting. Limited to United Association program participants.

UAT 269   Medical Gas   3 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course covers methods of teaching about the codes and standards that govern medical gas, medical-surgical vacuum piping systems installation and testing, requirements for installer qualification, and requirements for brazer qualification in accordance with ASME Section IX. A written exam will be administered at the end of the course. General and specific information needed to develop local medical gas training programs throughout the UA will be provided. Limited to United Association program participants.

UAT 269C Canadian Medical Gas Instructor Training   1.5 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 0 lab, 0 clinical, 0 other, 22.5 total contact hours

This course is designed to certify medical gas instructors in the delivery of the content required by the Canadian Standards Association (CSA) Code Z-7396.1.09. This code is required for all medical gas installations in Canada to be undertaken by licensed Plumbers or Steamfitters who must show documented proof of training in the CSA code. Limited to United Association program participants.

UAT 270   Properties of Metals   1.5 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6
12.5 lecture, 10 lab, 0 clinical, 0 other, 22.5 total contact hours

This course covers methods of teaching about the properties and characteristics of metals commonly used in the pipe trades. Emphasis will be given to explaining the nature of ferrous and non-ferrous metals in both their raw and manufactured form, the physical and mechanical properties of common metals and the processes used to create desired changes. Limited to United Association program participants.

UAT 271   Steam Heating Systems   1.5 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 0 lab, 0 clinical, 0 other, 22.5 total contact hours

This course covers methods of teaching about steam heating systems. Topics to be covered include: the identification, modification, installation and troubleshooting of steam heating systems; properties of saturated steam; piping of heat exchange equipments; and fluid draining. Boiler basics, co-generation and the role steam plays in the production of electricity will also be discussed. Limited to United Association program participants.

UAT 272   Wire Feed Orbital Welding   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
20 lecture, 20 lab, 0 clinical, 5 other, 45 total contact hours

This course covers methods of teaching about wire feed orbital welding. Topics to be covered include: wire feed orbital equipment capacity/capabilities and their accessories; installation and set-up of equipments; machine and weld head calibrations; weld joint design; tack-up; weld preparation; and welding parameters. Students taking this class should already be well versed in orbital tube welding. Limited to United Association program participants.

UAT 273   Introduction to the Transit and Level   **1.5 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
10 lecture, 4.5 lab, 0 clinical, 8 other, 22.5 total contact hours

This course covers methods of teaching about the fundamental use of the Transit, the Builder's Level, the Rotating Laser Level, the Pipe Laying Laser Level and the relationship to other surveying equipment. Practical job applications will be covered, such as learning how to set up and use the instruments, transferring of elevations, running a level net to prove that elevations are correct and the proper set-up of pipe and rotating lasers. Limited to United Association program participants.

UAT 274   Oxy-Acetylene Cutting and Welding   **1.5 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
15 lecture, 7.5 lab, 0 clinical, 0 other, 22.5 total contact hours

This course covers methods of teaching about oxy-acetylene safety, welding, layout and cutting procedures. Experts will demonstrate the techniques and procedures employed in successfully teaching this subject. Each student will have the opportunity to try the methods being discussed. This course will cover the technical aspects as well as the practice of cutting and welding pipe with oxy-acetylene. Students selecting this course should come to class in safe working clothes. Limited to United Association program participants.

UAT 275   Trade Related Trigonometry   **1.5 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
12.5 lecture, 0 lab, 0 clinical, 10 other, 22.5 total contact hours

This course covers methods of teaching about trade related trigonometry applications to first-year apprentices and journey-people. The majority of class time will consist of performing assignments in class. Teaching techniques will be addressed and problematic areas will be discussed to provide student instructors with intimate course knowledge. Limited to United Association program participants.

UAT 276   Orbital Tube Welding   **1.5 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
15 lecture, 7.5 lab, 0 clinical, 0 other, 22.5 total contact hours

This course covers methods of teaching about orbital fusion welding as used in semiconductor, food and beverage, pharmaceutical and biotechnology industries. This course is designed for students with a TIG welding background. Limited enrollment permits extensive hands-on welding time on the equipment. Students selecting this course should come to class in safe working clothes. Limited to United Association program participants.

UAT 277   GTAW - Wire Feed Machine Welding   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
35 lecture, 10 lab, 0 clinical, 0 other, 45 total contact hours

This course provides the welder/operator a basic understanding of the orbital pipe welding process. The course introduces the theory of operation, technology comparison of analog and microprocessor-controlled systems, equipment set-up and safety issues. The course features the Liburdi/Dimetric GTAW wire fed machine welding equipment. Limited to United Association program participants.

UAT 278   GTAW Wire Feed Welding   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
35 lecture, 10 lab, 0 clinical, 10.5 other, 55.5 total contact hours

This course covers methods of teaching about the Gold Trac GTAW wire feed machine pipe welding process at the local level. This course introduces the operation, technology, comparison of analog and microprocessor-controlled systems, hot wire welding and equipment set-up and safety issues. Additionally, the course covers process variables, system programmer control functions, weld parameter selection and development and Dimetrics power supplies such as GT2. Limited to United Association program participants.

UAT 278B Teaching Wire Feed Welding   1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
7.5 lecture, 15 lab, 0 clinical, 0 other, 22.5 total contact hours

This course focuses on training the trainer and will provide the student with an understanding of how to teach the orbital wire feed welding process at the local level. Topics cover the operation, technology, equipment set-up and safety issues associated with these types of advanced welding systems. Additionally, the course includes process variables, system programmer control functions, weld parameter selection and gives the theoretical basis for weld program development. The course is structured to provide students a hands-on training approach using the AMI 227 and Liburdi Gold Track orbital wire feed welding systems. Limited to United Association program participants.

UAT 279   UA Certified Machine Cutting, Severing, and Beveling   1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
15 lecture, 7.5 lab, 0 clinical, 0 other, 22.5 total contact hours

This course is designed to teach the Journeyperson how to machine the many different joint designs used in our industry today. Each student is required to have a calculator, ruler, paper and pencil, safety glasses and attend class in safe working clothes. To receive UA certification in this course, each journeyperson is required to pass a practical and written exam. Limited to United Association program participants.

UAT 280   Aluminum Pipe Welding (GTAW)   1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
12.5 lecture, 10 lab, 0 clinical, 0 other, 22.5 total contact hours

This course covers methods of teaching aluminum pipe welding utilizing the Gas Tungsten Arc Welding (GTAW) Process. The main focus will be on welding aluminum pipes in all positions. This course is supported by various technical presentations of industry representatives. Enrollment shall be limited to those who have a minimum of five years of GTAW experience. Limited to United Association program participants.

UAT 281   Gas Installations   1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
10 lecture, 12.5 lab, 0 clinical, 0 other, 22.5 total contact hours

This course covers methods of teaching about gas installations. The focus of this course is to examine gas trainers that simulate the operation of appliances and electrical control systems. Topics to be covered include: the Gas Codes, burner management, flame sensing systems, valves and regulators and electrical control systems. Limited to United Association program participants.

UAT 282   Plastic Welding   1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
10 lecture, 12.5 lab, 0 clinical, 0 other, 22.5 total contact hours

This course covers methods of teaching plastic welding process. The main focus will be on welding plastic pipes in all positions. Topics to be covered include: welding flat plate in horizontal and vertical positions; welding schedules in stationary position; backwelding glued joints; and welding in 5G position. Limited to United Association program participants.

UAT 283   Art of Tube Bending   1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
12 lecture, 10.5 lab, 0 clinical, 0 other, 22.5 total contact hours

This course covers methods of teaching about the parts of a bender, the bending process, setbacks as they relate to any bend and the layout of bends. This course shows the layout, common mistakes and correction of single bend errors. It also explains the use of props, line up, leveling of tubing in the bending process, isometric drawing, wire templates, numbering the bending order and safety concerns at the bending table. Limited to United Association program participants.

UAT 284   Gas Metal Arc Welding   1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
12 lecture, 6 lab, 0 clinical, 4.5 other, 22.5 total contact hours

This course covers methods of teaching about the technique of gas metal arc welding (GMAW). This course emphasizes set-up of GMAW equipment, selection of project consumables, selection of the proper gases and troubleshooting techniques. Hands-on welding instruction will be given on plate and pipe in all positions. Specialized applications of flux core, metal core, aluminum and pulse mig will also be presented. Limited to United Association program participants.

UAT 285   ASME B31.3 Process Piping   1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
16.5 lecture, 0 lab, 0 clinical, 6 other, 22.5 total contact hours

This course covers methods of teaching about the ASME B31.3 Process Piping Code. The course will cover B31.3 scope, materials, fabrication & erection, inspection, examination and testing. The course will also cover mechanical behavior, welding metallurgy, basic piping design, cathodic protection and piping for Category M Fluid Service. Students selecting this course should have a strong background in metallurgy, welding, and piping fabrication. Limited to United Association program participants.

UAT 286   Industrial Refrigeration Trainer   **1.5 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6
12.5 lecture, 10 lab, 0 clinical, 0 other, 22.5 total contact hours

This course covers methods of teaching about how to use the Hampden Industrial Refrigeration Trainer (IRT) as a teaching tool in presenting basic commercial refrigeration concepts. Topics to be covered include: operating and servicing large industrial systems requiring water-cooled condensers; electric and hot gas defrost systems; cooling towers; hot bypass capacity control systems; crankcase pressure regulators; crankcase heaters; and pressure pumps. Limited to United Association program participants.

UAT 287   R410A Safety and Training   **1.5 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6
11 lecture, 6.5 lab, 0 clinical, 5 other, 22.5 total contact hours

This course covers methods of teaching about providing training and certification for the proper safety, handling and application of R410A refrigerant. Students will be informed on how they can become a proctor as well as how to administer the Universal R410A Safety & Training Exam in their home Local Union. Topics to be covered include: R410A test preparation, thorough knowledge of the R410A equipment and use of the online Esco Institute Webpage for proctors. Limited to United Association program participants.

UAT 288   Shielded Metal Arc Welding   **1.5 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6
8.5 lecture, 8 lab, 0 clinical, 6 other, 22.5 total contact hours

This course covers methods of teaching about Shielded Metal Arc Welding (SMAW) and Oxy-Fuel Cutting & Welding. Topics to be covered include: welding shop safety, types and proper operation of the welding machines used in SMAW, and welding types of electrodes and their make-up. Class size will be limited to allow as much rod time as possible. Students selecting this course must come to class in safe working clothes. Limited to United Association program participants.

UAT 289   Electrical Diagrams in HVAC   **1.5 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6
16.5 lecture, 6 lab, 0 clinical, 0 other, 22.5 total contact hours

This course covers methods of teaching about alternative methods for teaching electrical diagrams in HVAC. This course is designed around a software program called "The Constructor." Participants will learn how this software works, how to interpret electrical diagrams using this new software and how to apply it in teaching HVAC apprentices. Limited to United Association program participants.

UAT 290   Gas Tungsten Arc Welding   **1.5 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6
8.5 lecture, 8 lab, 0 clinical, 6 other, 22.5 total contact hours

This course covers methods of teaching about Gas Tungsten Arc Welding. It consists of welding pipe in the 2G, 5G and 6G positions. The course covers the use of consumable inserts and the cup-walking technique on carbon and stainless steel. Square Butt Fusion procedures, used in the food and drug industry, will also be discussed. Enrollment will be limited to experienced welding students only. Students selecting this course must come to class in safe working clothes. Limited to United Association program participants.

UAT 291   Residential Refrigeration UA STAR   **1.5 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 0 lab, 0 clinical, 0 other, 22.5 total contact hours

This course covers methods of teaching how to conduct a review for the Residential and Light Commercial Refrigeration UA STAR exam. All of the categories covered by the exam will be reviewed. Students will use the UA Interactive On-Line Curriculum to download the Residential and Light Commercial Refrigeration UA STAR review materials. Web-based STAR review classes will also be discussed. Limited to United Association program participants.

UAT 292   Pipefitting Layout   **1.5 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
5 lecture, 17.5 lab, 0 clinical, 0 other, 22.5 total contact hours

This course covers methods of teaching about pipefitting layout. This class will teach students a unique way to layout pipe and fittings in the field without using math or manuals. This is a hands-on class so students are encouraged to wear jeans as you will be working on the floor. This class will also cover the mitering of pipes and fittings and the fabrication of specialty tools for the trade. Limited to United Association program participants.

UAT 293   Commercial Refrigeration UA STAR   **1.5 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 0 lab, 0 clinical, 0 other, 22.5 total contact hours

This course covers methods of teaching about how to conduct a review for the Commercial Refrigeration UA STAR exam. All of the categories covered by the exam will be reviewed. Students will use the UA Interactive On-Line Curriculum to download the Commercial Refrigeration UA STAR review materials. Web-based STAR review classes will also be discussed. Limited to United Association program participants.

UAT 294   Plumbing Service   **1.5 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
12.5 lecture, 10 lab, 0 clinical, 0 other, 22.5 total contact hours

This course covers methods of teaching about plumbing service. The course will cover the operational, installation, and safety aspects including trouble shooting and repair of fixtures, flush valves sewer systems, faucets, appliances, and electronics in the plumbing industry. Aspects of customer relations and marketing will be reviewed. This course will address the employer, employee relationships, and standard company policies of the plumbing industry. Limited to United Association program participants.

UAT 294B Advanced Plumbing Service II   **1.5 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6

7.5 lecture, 15 lab, 0 clinical, 0 other, 22.5 total contact hours

This course on residential and commercial service plumbing will review and cover the U.A. Plumbing Service Curriculum. Throughout this advanced training, students will identify new opportunities with up-to-date, high tech, plumbing fixtures, products, tools, equipment, safety and green technology in the plumbing industry. This course will address the importance of customer communications, social styles, salesmanship, marketing and the cost of doing business. Limited to United Association program participants.

UAT 295   UA STAR Plumbing Review   1.5 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6
18 lecture, 4.5 lab, 0 clinical, 0 other, 22.5 total contact hours

This course covers methods of teaching about how to conduct the Plumbing UA STAR Certification Exam. All of the categories covered by the exam will be reviewed. Students will use the UA Interactive On-Line Curriculum to download the UA STAR plumbing review materials. Web-based STAR review classes will also be discussed. The final 4 hours of the class will be an actual NITC proctored UA STAR Plumbing exam. Limited to United Association program participants.

UAT 296   UA STAR HVACR Review   1.5 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6
18 lecture, 4.5 lab, 0 clinical, 0 other, 22.5 total contact hours

This course covers methods of teaching about how to conduct a review for the HVAC & R UA STAR Plumbing certification exam. All of the categories covered by the exam will be reviewed. Students will use the UA Interactive On-Line Curriculum to download the HVAC & R UA STAR review materials. Web-based STAR review classes will also be discussed. The final 4 hours of the class will be an actual NITC proctored HVAC & R UA STAR Plumbing exam. Limited to United Association program participants.

UAT 297   Sprinkler Fitter UA STAR   1.5 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 0 lab, 0 clinical, 0 other, 22.5 total contact hours

This course covers methods of teaching about how to conduct a review for the Sprinkler Fitter UA STAR exam. All of the categories covered by the exam will be reviewed. Students will use the UA Interactive On-Line Curriculum to download the Sprinkler Fitter UA STAR review materials. Web-based STAR review classes will also be discussed. Limited to United Association program participants.

UAT 298   UA STAR Pipefitting Review   1.5 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6
14 lecture, 4.5 lab, 0 clinical, 4 other, 22.5 total contact hours

This course covers methods of teaching about how to conduct an 18.5 hour review for the UA STAR Steamfitting/Pipefitting certification exam. All categories covered by the exam will be reviewed. Using the UA interactive online curriculum to download the review materials and practice exams will be covered. Web-based STAR review classes will also be discussed. The final 4 hours of the class will be an actual NITC proctored UA STAR Steamfitting/Pipefitting exam. Limited to United Association program participants.

UAT 299   ATR Refresher Training   1.5 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6
10 lecture, 8 lab, 0 clinical, 4.5 other, 22.5 total contact hours

This course covers methods of teaching about how to conduct an Authorized Testing Representative (ATR) refresher training for the UA Welder Certification Program. Emphasis will be placed on program changes and their effects on Local Unions' implementation of the system requirements. A written examination will be administered to evaluate students' understanding and capability to implement program requirements. Limited to United Association program participants.

UAT 305C Canadian Green Building   **1.5 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 0 lab, 0 clinical, 0 other, 22.5 total contact hours

This course includes four main topics: Leadership in Energy and Environmental Design, understanding high efficiency buildings and sustainable design, development of a training program for delivery of up-to-date local membership skills for the green building revolution, methods and strategies for identification and targeting of work in the green building sector for the future. Limited to United Association Instructor Training program graduates.

UAT 307   Interactive Teaching   **1.5 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 0 lab, 0 clinical, 0 other, 22.5 total contact hours

This class will build on the professional classes offered during the first five years of the UA Instructor Training Program specific to fire sprinkler fitter instructors. The class will help our instructors combine presentation skills with technical knowledge. Topics include new and more effective techniques on how to: effectively engage their audience, create individual and group discussion, structure classroom set-up to be more conducive to individual participation, disengage problematic or disruptive participants, manipulate the lesson plan to fit a set time frame and create participant interaction. Limited to United Association Instructor Training program graduates.

UAT 308   Industrial Refrigeration Market   **1.5 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 0 lab, 0 clinical, 0 other, 22.5 total contact hours

This class will cover the set-up, planning, organization and instruction related to the industrial/commercial refrigeration industry. Topics covered will include system design and utilization, case-cooler-end product refrigerating principles, system troubleshooting and start-test and balance. Of important inclusion will be the EPA's new "GreenChill" (supermarket refrigeration) program and its move into the industry, and how field technicians can assist the customers in qualifying and re-certifying buildings for the program. Limited to United Association Instructor Training program graduates.

UAT 309   Combustion Analysis   **1.5 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 0 lab, 0 clinical, 0 other, 22.5 total contact hours

This sustainable energy course is designed to educate UA instructors on the essential information required to train apprentices and journeymen on achieving higher fuel efficiencies, better system performance and reduced greenhouse gas emissions by performing and understanding combustion analysis. It is necessary to perform a combustion analysis on all combustion systems to ensure safe operation at peak efficiency. Upon successful completion and assessment, participants will receive a certification that attests to their knowledge of combustion analysis and carbon monoxide safety. Limited to United Association Instructor Training program graduates.

UAT 310   Setting Up HVACR Programs   **1.5 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
12 lecture, 10.5 lab, 0 clinical, 0 other, 22.5 total contact hours

This course trains instructors in procedures for starting up new HVACR programs at the local school. Topics include the scope of the industry, the market requirements of the geographical areas and the physical equipment, tools, supplies and manpower requirements for a HVACR program to be successful. Limited to United Association Instructor Training program graduates.

UAT 311   Confined Space   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
30 lecture, 15 lab, 0 clinical, 0 other, 45 total contact hours

This five-day training is a combination of OSHA's (#2260) 3-day classroom-based confined space course on OSHA's General Industry Standard with CPWR's 2-day hands-on simulated entry training. The OSHA 2260 course is designed to direct students to first determine if a space is a confined space, then to properly classify each confined space as either permit-required or a non-permit space. Topics include legal issues, permit programs, ventilation and rescue. Course features workshops on confined space hazards and classification of spaces. CPWR's Hands-on training includes air monitoring, ventilation, supplied-air respirator (SARs), self-contained breathing apparatus (SCBAs), entry procedures, retrieval and other aspects of permit-required confined space entry. Participants who complete the course will receive: an OSHA 2260 Certificate; a CPWR 16-hr Confined Space Certificate; and a CPWR Train the Trainer Certificate. Limited to United Association Instructor Training program graduates.

UAT 312   Energy Auditing and Retrofit   1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 0 lab, 0 clinical, 0 other, 22.5 total contact hours

This course will cover how the sustainable energy movement is using the energy retrofit process to meet the goal of making buildings efficient. All steps in the energy retrofit process will be covered with emphasis on the audit and Energy Conservation Measures (ECM) portion of the process. Also, the instruments used in the audit process as well as the engineering concepts of developing ECM will be covered. Limited to United Association Instructor Training program graduates.

UAT 320   History of the Labor Movement   1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
12 lecture, 0 lab, 0 clinical, 10.5 other, 22.5 total contact hours

This course covers methods of teaching about the history and heritage of the Labor Movement. It is built on the narratives of working people and their leaders creating enduring institutions. It is a story of crises, courage, and innovation that spans approximately 350 years from organized colonial craftsmen to workers confronting the global economy in the 21st century. Limited to United Association Instructor Training program graduates.

UAT 321   Labor History and the UA: 1920 to Present   1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
18.5 lecture, 0 lab, 0 clinical, 4 other, 22.5 total contact hours

This course covers methods of teaching about the labor history and the UA from the 1920s to the present. This course is a continuation of the narratives of working people and the leaders who created enduring labor institutions. Course UAT320, History of the Labor Movement, is a prerequisite for taking this course. Limited to United Association Instructor Training program graduates.

UAT 322   Labor History in the UA 1800 to Present   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

Labor History and the UA is a class covering the struggles of the labor movement from 1800 to present. It is built on the narratives of working people and their leaders creating enduring institutions. It is the story of crises, courage and innovations that spans 350 years from colonial craftsmen into the twenty-first century. There is special attention paid to more recent history from the 1920's to the present day. This class will cover events and people through time that have played an important role in labor history. Limited to United Association Instructor Training program graduates.

UAT 325   Industrial Rigging   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
37 lecture, 0 lab, 0 clinical, 8 other, 45 total contact hours

This course covers methods of teaching about industrial rigging. This course has a theoretical and a practical component covering the best rigging practices, calculating centers of gravity, sling stress, crane set up, and the use of tuggers, jacks, and rollers. There will be a written exam along with the performance exam, which upon passing the student will receive a UA/EPRI certification for industrial rigging as well as a rigging course CD and example workbook. Limited to United Association Instructor Training program graduates.

UAT 331   Energy Auditor Certification   1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
7.5 lecture, 15 lab, 0 clinical, 0 other, 22.5 total contact hours

This course teaches procedures for accumulating and evaluating practical data related to energy usage in residential and commercial buildings. The purpose of this course is to prepare a certified audit containing energy analysis results and recommendations for energy cost savings. Upon successful completion of this course, participants will receive certification that attests to their knowledge of energy efficient technologies based on manufacturers' performance data, legislation related to energy mandates, blower-door testing, thermography and identification of energy saving measures. The certification, including a written exam and performance evaluation, allows the instructor to train and certify members in their home local. Limited to United Association Instructor Training program graduates.

UAT 343C Canadian Green Construction   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
30 lecture, 15 lab, 0 clinical, 0 other, 45 total contact hours

The UA Canada Green Construction course teaches instructors to prepare trades persons/workers to participate fully in Green/Sustainable Construction projects in Canada. Topics include the Integrated Green Project Team concept, the Green Building Standards rating system, identifying critical practices on sustainable project sites and project management for Green Construction for foremen and supervisory personnel. The course will serve as a prerequisite to qualify to write LEED Green Associate Professional for GaGBC credentials. Limited to United Association Instructor Training program graduates.

UAT 344C Canadian Steamfitter Red Seal   1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 0 lab, 0 clinical, 0 other, 22.5 total contact hours

This course will teach participants to deliver instruction on the requirements for the Canadian Steamfitter Interprovincial Red Seal course. The students will take an in-depth look at the Red Seal Program, National Occupational Analysis and various provincial statutes that regulate worker certification, as well as instructional materials required to deliver this program. Instructors that take this course should have experience in the Steamfitter trade in order to meet the requirements for delivery of this course and successfully challenging the examination. Limited to United Association Instructor Training program graduates.

UAT 351   Plumbing Codes   1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
14.5 lecture, 0 lab, 0 clinical, 8 other, 22.5 total contact hours

This course covers methods of teaching about the development, technical comparison, interpretation and practical application of the model plumbing and mechanical codes. The UA Plumbing Code Manual will be used as the base document. Limited to United Association Instructor Training program graduates.

UAT 352   Residential Fire Protection Systems Certification for Installers   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
30 lecture, 15 lab, 0 clinical, 0 other, 45 total contact hours

This course prepares the student to successfully pass the ASSE Series 7000 Installers Certification for plumbing based on fire protection systems used for one- and two-family dwellings. The course includes general residential plumbing, basic fire science, approved residential fire sprinklers and other approved plumbing products for fire protection. The course also provides a working knowledge of location, sizing and installing residential fire protection systems. Limited to United Association Instructor Training program graduates.

UAT 353   ASME Section IX Welding Code   **1.5 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 0 lab, 0 clinical, 0 other, 22.5 total contact hours

This course is designed to provide individuals with an understanding of welding procedures specifications and welder qualifications in accordance with Section IX of the ASME Code. Participants will be able to apply the rules of Section IX as they pertain to the development of welding procedure specifications and the qualification of welders. A logical approach to compliance with Section IX is discussed and implemented in an open workshop environment. Limited to United Association Instructor Training program graduates.

UAT 355   Quality Control Inspection   **1.5 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
7.5 lecture, 15 lab, 0 clinical, 0 other, 22.5 total contact hours

This course will cover the duties and responsibilities of a Quality Control Inspector. The course will provide the information and knowledge needed to train individuals as Quality Control Inspectors for work in the construction/fabrication industry both in the shop and on the job site. The course instructors are UA members with many years of experience working as Quality Control Managers in the piping industry. The United Association believes that having a UA trained quality control inspector on staff brings both quality and financial savings to the employing contractor and customer alike. Limited to United Association Instructor Training program graduates.

UAT 356   Corrosive Resistant Alloys   **1.5 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
7.5 lecture, 15 lab, 0 clinical, 0 other, 22.5 total contact hours

This course is designed for UA Welding Instructors who teach the challenges of welding high nickel alloys. The course focuses on the procedures and techniques utilized in welding corrosion resistant alloys. As the piping industry is turning to the use of these materials more and more, this course will provide Local Unions a means of helping their members develop the skills necessary to address industry's welding needs. Our interactive format offers the opportunity for individuals to share and learn from their peers. Students must provide their own personal safety equipment. Limited to United Association Instructor Training program graduates.

UAT 358   Cross Connection Control   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course covers methods of teaching about surveys and inspections for cross connection control. Topics include: identifying cross-connections; understanding how backflows occur; methods used to control backflows; recommended applications for each type of backflow assembly; interpreting plumbing codes and local ordinances; and inspecting a facility for cross-connections. Exercises include reviewing plans and going to an actual site to do a survey inspection for cross-connection control. Limited to United Association Instructor Training program graduates.

UAT 362   Valve Repair Recertification   **1.5 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
8.5 lecture, 8 lab, 0 clinical, 6 other, 22.5 total contact hours

This course covers methods of teaching about how to conduct a Valve Repair Recertification Program using the Quality System Manual. Emphasis will be placed on comprehending new industry standards on valve maintenance and repair techniques; precision measuring devices; hands-on review of valve disassemble; and documentations used for quality control. A written examination will be administered to evaluate students' understanding and capability to implement program requirements. Limited to United Association Instructor Training program graduates.

UAT 367   Advanced Air and Water Analysis   **1.5 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
15 lecture, 7.5 lab, 0 clinical, 0 other, 22.5 total contact hours

This course covers methods of teaching about advanced air and water analysis. It is designed for students who have Start, Test and Balance experience. Topics include: advanced studies of psychrometrics, pump and fan design, electrical power analysis, and the use of variable frequency drives. Students will engage in classroom activities and perform practical exercises on different operating equipment in a mechanical area. Limited to United Association Instructor Training program graduates.

UAT 369   Advanced Residential Training   **1.5 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
15 lecture, 7.5 lab, 0 clinical, 0 other, 22.5 total contact hours

This course covers methods of teaching about administrative procedures for implementing this program in the various local areas. Students will learn how the recruiting, promoting, and training differs from the regular apprentice training programs. This course covers the installation, maintenance, and servicing of plumbing, heating, air conditioning, and the sprinkler systems installed in residential application. Limited to United Association Instructor Training program graduates.

UAT 371   Crane Signalperson Training and Certification   **1.5 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
15 lecture, 7.5 lab, 0 clinical, 0 other, 22.5 total contact hours

This course uses the OSHA Signalperson Training Program, which is a state of the art interactive signalperson training aid. The course covers all pertinent requirements of the current OSHA 1926.550, ASME B30.5, B30.23, and even the proposed OSHA Cranes and Derrick Standard 1926.1400. The course covers theoretical and practical components of signaling and crane characteristics and limitations. This course uses instructor materials which include practice scenarios so that signaling becomes second nature to students. Certification and Examiner (proctor) credentials are awarded upon successful completion of the course. Limited to United Association Instructor Training program graduates.

UAT 390   Operation of a UA Training Program   **1.5 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
12 lecture, 0 lab, 0 clinical, 10.5 other, 22.5 total contact hours

This course covers methods of teaching about how to provide local union coordinators, directors, and Joint Apprenticeship Training Committee members with the background and knowledge necessary to operate today's UA's local training programs as well as to provide policy and guidance developing local standards of apprenticeship for approval and registration. Limited to United Association Instructor Training program graduates.

UAT 391   Coordinators' Yearly Update   **1.5 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 0 lab, 0 clinical, 0 other, 22.5 total contact hours

This course covers methods of teaching about important administrative concerns and issues affecting the local union Joint Apprenticeship and Training Committee. Each section addresses current events and new concepts in the area of training. Students are encouraged to bring questions concerning their local union Joint Apprenticeship and Training Committee for discussion. Limited to United Association Instructor Training program graduates.

UAT 393   Canadian Coordinators' Update   **1.5 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
12 lecture, 0 lab, 0 clinical, 10.5 other, 22.5 total contact hours

This course is designed to provide Canadian Local Union Directors/Training Coordinators with information about important administrative updates, concerns, and issues affecting the local unions so that they will be able to share this knowledge with others. Each course module addresses the impact of current events and new regulations on apprenticeship training. Students are encouraged to bring questions concerning their local union Joint Apprenticeship and Training Committee for discussion. Limited to United Association Instructor Training program graduates.

UAT 395   UA Administrative Resources   **1.5 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 0 lab, 0 clinical, 0 other, 22.5 total contact hours

The focus of this course is to teach Training Coordinators/Directors how to use technology to teach with Blackboard and Microsoft Office and to use everything available to them through the UANET. This course will focus on the apprentice registration process, the UA Smart System, and state and federal grants. Students taking this course should have a working knowledge of how to operate a computer. Limited to United Association Instructor Training program graduates.

UAT 397   Coaching Students with Challenges   **1.5 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 0 lab, 0 clinical, 0 other, 22.5 total contact hours

This teach-the-teachers course focuses on how to coach adult learner students who are coping with life's challenges. Topics to be covered includes: how to recognize students who are struggling academically or personally; how to offer support to students and refer them to appropriate personnel; and how to adapt to students' needs and learning styles. Participants will learn how to apply useful principles to course design as well as to address common, student-related issues that arise during classroom instruction. Limited to United Association Instructor Training program graduates.

Video Production   VID

VID 105   Foundations in Digital Video I   **4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 45 other, 90 total contact hours

In this course, students are introduced to the basics of video production and editing. Students are guided through a series of demonstrations and hands-on exercises to develop their skills in production and editing. This course contains material previously taught in VID 101 and VID 110.

VID 125   Foundations in Digital Video II   **4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; VID 105 minimum grade "C+"
45 lecture, 0 lab, 0 clinical, 45 other, 90 total contact hours

This course provides students with hands-on technical experience in production, production aesthetics, and editing/post-production. The technical phase provides students with advanced skills to shoot with a camera, set up lights and manage audio-recording equipment. From pre-production to post-production, students will cover all aspects of producing projects from start to finish. This course contains material previously taught in VID 102 and VID 112.

VID 180   Television Studio I   **4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; VID 125
45 lecture, 0 lab, 0 clinical, 45 other, 90 total contact hours

In this course, students are introduced to a television studio environment, where they will experience hands-on training and team-oriented tasks to complete three short productions. Studio floor positions cover studio lighting, 3-camera operating setup, microphone setups, the floor manager and set design. Control room duties include director, audio mixer, video switcher and digital graphics for on-screen effects. Students will rotate positions in each of these areas.

VID 185   Television Studio II   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; VID 180 minimum grade "C+"
30 lecture, 30 lab, 0 clinical, 0 other, 60 total contact hours

This advanced studio techniques course continues technical training for the student, but with an added emphasis on application of the techniques. Students will develop original scripts and content for productions in formats such as talk shows, children's programming or documentaries. In-studio productions (that include field segments) will be created and broadcast for web streaming.

VID 200   Lighting for Video   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; VID 125 minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

 In this course, students gain hands-on experience with lighting for video through the exploration and application of multiple lighting effects. Areas covered include manipulation of light using filters, color temperatures and white balance and use of lighting equipment. Safety procedures as well as many other topics consistent with improving the ability to communicate more effectively using lighting in video are discussed. The title of this course was previously Lighting.

VID 203   Web Video   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; VID 125 may enroll concurrently
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students will create and customize a basic Web page to showcase their projects, demo reel, and peripheral projects that relate to multimedia. Students also produce three short commercial video projects to showcase on their completed Web page.

VID 210   Screenplays   3 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6; VID 105 and VID 125, minimum grade "C+"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students are introduced to the fundamentals of screenplay construction. The script construction process examines story, theme, character development, plot and scene structure, dialogue and action descriptions. This course requires the student to develop an entire screenplay intended for production in other advanced courses.

VID 220   Audio for Digital Video   3 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6; VID 125
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students will learn the basic principles of audio engineering and gain practical, hands-on experience while working in video production environments such as television studio or location work. The focus will be on recording dialogue for TV or digital video, acoustics, microphones and basic electronics common to the video recording and mixing process. Students will complete video production/mixing projects and may choose to produce an extended scaled project that is written, produced, directed, shot and edited in the advanced courses.

VID 230   Directing for Video Production   3 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6; VID 125
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This introductory directing course breaks down the steps to approach a script and provide for creative style and development at each stage of the production process. Students will use an attention-to-detail approach - from preparing scenes, lighting and cinematography to working with actors. Additional study will include examination of various masters such as Orson Welles, Stanley Kubrick, and David Fincher.

VID 240   Digital Cinematography   3 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6; VID 125
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students will gain hands-on experience in digital cinematography. Students will plan and practice camera techniques used for interior and exterior lighting, composition and framing, green screen techniques and other aspects of visual storytelling. Students will practice mechanical aspects of the lens: f-stops, depth of field and rack focus shots. Students will examine the works of masters such as Greg Toland, Conrad Hall, and Roger Deakins. Students may choose to produce an extended scaled project that is written, produced, directed, shot and edited in the advanced courses series.

VID 250   Advanced Editing   3 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course is designed for the completion phase of the final thesis project. Editing aspects such as pacing, compositing, and special effects will be utilized for the final production project.

VID 255   Green Screen I   3 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6; VID 125
45 lecture, 0 lab, 0 clinical, 15 other, 60 total contact hours

In this course, students are introduced to in-studio projects utilizing green screen (or chromo key) effects. Students create virtual backgrounds, landscapes or atmospheres to stage against actors, activities or props in the foreground. This process includes lighting, filming and editing. The title of this course was previously Video Studio/Green Screen Effects.

VID 260   Green Screen II   3 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6;VID 255
45 lecture, 15 lab, 0 clinical, 0 other, 60 total contact hours

In this advanced techniques course, students will have the opportunity to write and create one or more original green screen videos by performing all aspects of production and post-production. Productions, with an emphasis on continuity and color matching, will be planned and shot with artificial environments involving the intricacies of full scenes.

VID 270   Documentary Video Production   3 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6; VID 125 may enroll concurrently
30 lecture, 30 lab, 0 clinical, 0 other, 60 total contact hours

This course provides students with skills to write, produce, direct and edit non-fictional videos. Students will be instructed on methods and hands-on-skills to construct a non-fictional story. This includes formulating a story with an angle, structure, content and style. Interviewing and researching methods are demonstrated through hands-on exercises. Students view/critique various contemporary documentaries as they relate them to their own projects. The title of this course was previously Documentary and Reality Videos.

VID 276   Video Graphics I   3 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6; VID 125 minimum grade "C"
45 lecture, 15 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students are introduced to motion graphics composition for film/video and internet distribution. Software, such as Adobe After Effects, is used as a tool to create motion graphics compositions. Students learn basic visual effects terminology, effect keying and transparency, keyframing, synchronizing compositions to music, compression codecs required for output optimization, and saving the finished composition to a variety of film/video and internet ready formats. Lecture, hands-on experience and creative mentoring are combined to develop motion graphics compositing skills. Students are exposed to examples of work from industry professionals for inspiration. This course was previously VID 299. The title of this course was previously Advanced Video Graphics I.

VID 277   Video Graphics II   3 credits
Level I Prerequisites: Academic Reading and Writing Levels of 6; VID 276 minimum grade "C"
45 lecture, 15 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students build upon the basic skills learned to produce advanced motion graphics compositions. Software, such as Adobe After Effects, is used to create motion graphics compositions. Students will create original work based on advanced concepts such as color-screen keying, particle effects, three-dimensional space, and geometric motion. Students will expand their ability to create motion graphics through critical review of work from industry professionals. The title of this course was previously Advanced Video Graphics II.

VID 295   Portfolio and Project Seminar   **3 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6; VID 125; and one of the following: VID 200, VID 255, VID 270 or VID 277, may enroll concurrently
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students will develop skills to create a resume, compile a DVD demo reel and complete a final video thesis project. The demo reel is compiled based on previously completed student works. The demo reel will provide students with a professional portfolio to solicit work in the video production field. Each student will write, produce and direct a thesis project. The title of this course was previously Professional Portfolio.

Welding & Fabrication   **WAF**

WAF 103   Introduction to Gas Tungsten Arc Welding   **2 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6
15 lecture, 45 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students will be exposed to the gas tungsten arc welding (GTAW) process. The student will weld butt, lap and tee joints in the flat and horizontal positions on mild steel and aluminum. Welding vocabulary, theory and safety precautions will be discussed in the classroom. The student will apply safe work practices, welding techniques and theories related to the composition and properties of these metals. This class is not a requirement for the certificate, advanced certificate or associate degree in welding and fabrication. The title of this course was previously Heli-ARC Welding.

WAF 104   Soldering and Brazing   **2 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6
15 lecture, 45 lab, 0 clinical, 0 other, 60 total contact hours

This course is designed to provide basic knowledge of soldering and brazing processes on copper tubing and fittings. Students braze butt, lap and tee joints on steel, and perform a variety of solder and braze joints on ferrous and non-ferrous materials. The student will apply safe work practices in the welding laboratory setting. The student's final copper tubing project will be pressurized to ensure proper soldering and brazing applications. This class is not a requirement for the certificate, advanced certificate or associate degree in welding and fabrication.

WAF 105   Introduction to Welding Processes   **2 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6
15 lecture, 45 lab, 0 clinical, 0 other, 60 total contact hours

This is a basic welding class that introduces four welding processes; oxy-fuel welding (OFW), gas tungsten arc welding (GTAW), shielded metal arc welding (SMAW) and gas metal arc welding (GMAW). One cutting process is also explored; oxy-fuel cutting (OFC). The student will learn welding vocabulary, welding theory, safe handling practices and set-up of all related welding equipment. Students will weld using each process on ferrous or non-ferrous materials that are commonly used in industries such as automotive, manufacturing, structural and artistic sculpture work. The title of this course was previously Welding for Art and Engineering.

WAF 106   Blueprint Reading for Welders   **3 credits**
Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 2
45 lecture, 15 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students will be introduced to the basics of welding blueprint reading and interpretation. Students will learn basic symbols, lines, joints, and dimensions used in welding. Students will weld 3-dimensional projects according to the blueprint specifications.

WAF 111   Oxy-fuel Welding   4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; WAF 100, WAF 101, WAF 104 or WAF 105, minimum grade "C", may enroll concurrently
30 lecture, 90 lab, 0 clinical, 0 other, 120 total contact hours

This course focuses on the use of oxy-fuel equipment to perform oxy-fuel cutting, brazing and butt, lap, and tee welds in all positions on mild steel. Students will apply safe work practices and welding theory in the laboratory setting. The title of this course was previously Welding I Oxy-Acetylene.

WAF 112   Shielded Metal Arc Welding   4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; WAF 100, WAF 102 or WAF 105, minimum grade "C", may enroll concurrently
30 lecture, 90 lab, 0 clinical, 0 other, 120 total contact hours

This course includes welding vocabulary and theory related to the shielded metal arc welding (SMAW) process, also known as "stick" welding. Students will learn to weld on DC+, DC- and AC polarities on various thicknesses of mild steel. Electrode identification, classification and proper selection for various applications will be exercised. Students will apply safe work practices related to the arc welding process in a laboratory setting. The title of this course was previously Welding II Basic ARC.

WAF 123   Advanced Oxy-fuel Welding   4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; WAF 111 minimum grade "C"
30 lecture, 90 lab, 0 clinical, 0 other, 120 total contact hours

This course is designed for the advanced oxy-fuel welding student. Instruction includes out of position welds on various plate and tubular configurations. Procedures and welding theories are covered and practiced on ferrous and non-ferrous materials. Brazing steel and cast iron is also covered. The title of this course was previously Welding III Advanced Oxy-Acetylene (OAW).

WAF 124   Advanced Shielded Metal Arc Welding   4 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; WAF 112 minimum grade "C"
30 lecture, 90 lab, 0 clinical, 0 other, 120 total contact hours

This course covers the SMAW process using AC (Alternating Current) and DCEP (Direct Current Electrode Positive). Welding theories of various weld joints in the horizontal, vertical and overhead positions and tubular materials are addressed. This class also includes instruction and practice on more advanced welding techniques, electrode classification, electrode identification, proper applications as well as welding codes and standards in the welding industry. The title of this course was previously Welding IV Advanced ARC (SMAW).

WAF 200   Layout Theory Welding   3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 2
45 lecture, 15 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students will be introduced to the basics of layout theory and practice. Students will learn various methods, processes, and tools used in welding. Template making and joining is emphasized. Students will solve problems using orthographic and isometric plans and models.

WAF 205   Plumbing and Pipefitting I   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 2
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course is a practical study of plumbing and pipefitting fundamentals as well as the classifications and functions of boilers, steam, and hot water heating systems. Heating code is also covered.

WAF 206   Plumbing and Pipefitting II   **4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; WAF 205
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This course is a continuation of Plumbing and Pipefitting I. Participants learn about water supply, waste disposal, drainage, venting, unit sanitation equipment, and plumbing codes. Students with equivalent experience may contact the instructor for permission to waive the prerequisite.

WAF 210   Welding Metallurgy   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; WAF 112 and WAF 215, minimum grade "C"; both courses may
                             enroll concurrently
45 lecture, 15 lab, 0 clinical, 0 other, 60 total contact hours

This course will cover the fundamental behaviors and properties of ferrous and nonferrous metals. Students will prepare samples for macro and micro inspection to identify different grain structures and properties. Following the American Welding Society codes and specifications, students will be able to recognize, repair, troubleshoot, and determine various weld procedures.

WAF 215   Advanced Gas Tungsten Arc Welding   **4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; WAF 103 or WAF 105, minimum grade "C"
30 lecture, 90 lab, 0 clinical, 0 other, 120 total contact hours

This course is designed for the advanced gas tungsten arc welding (also referred to as TIG) student. Welding is done on ferrous and non-ferrous materials in horizontal, vertical and overhead positions on plate and tubular materials. Welding theories and advanced welding techniques are addressed along with filler metal classification, identification and proper selection for specific applications. The title of this course was previously Welding V Advanced GTAW and GMAW.

WAF 226   Specialized Welding Procedures   **4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; WAF 123, WAF 124 and WAF 215, minimum grade "C"
30 lecture, 90 lab, 0 clinical, 0 other, 120 total contact hours

In this course, students are exposed to uncommon and unique welding process and material combinations. Four welding processes, GMAW, GTAW, SMAW and OFW will be performed on ferrous and non-ferrous materials. Advanced welding theories, filler metal classification, identification and proper selection for material type is addressed.

WAF 227   Basic Fabrication   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; WAF 105, WAF 106 and WAF 200, minimum grade "C"
30 lecture, 30 lab, 0 clinical, 0 other, 60 total contact hours

This class is designed for the welding student who is searching for the skills necessary to design, cut and fit pieces to be welded. It blends knowledge of welding and layout theory to build a variety of projects which include assigned projects as well as individually chosen projects. The individual project will be completed from a student created blueprint. Students will learn how to safely and properly use modern fabrication equipment for bending, punching, cutting and shaping metal.

WAF 229   Shape Cutting Operations   **3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; WAF 105 and WAF 200, minimum grade "C"; both courses may enroll concurrently
45 lecture, 15 lab, 0 clinical, 0 other, 60 total contact hours

Students will be introduced to basic numerical control software and programming while using a Burny 10 PC based controller. Several programming languages, used to communicate with the plasma cutting system, will be covered. Students will program the cutting of two-dimensional parts and learn how to troubleshoot the equipment for problems and cut quality and cut sequencing.

WAF 288   Gas Metal Arc Welding   **4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6;WAF 105 minimum grade "C", may enroll concurrently
30 lecture, 90 lab, 0 clinical, 0 other, 120 total contact hours

This course focuses on gas metal arc welding (GMAW), which is more commonly known as metal inert gas (MIG) welding. Welding is done on steel with solid and flux cored wires in various positions. Welding theories and proper welding techniques are addressed along with filler metal classification, identification and proper selection for specific applications. The course was previously WAF 289, MIG Welding.

Yoga   YOG

YOG 101   Yoga I   **2 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
0 lecture, 0 lab, 0 clinical, 30 other, 30 total contact hours

This course introduces and applies fundamental disciplines and postures in yoga. The title of this course was previously Introduction to Hatha Yoga.

YOG 102   Yoga II   **2 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; YOG 101 minimum grade "C"
0 lecture, 0 lab, 0 clinical, 30 other, 30 total contact hours

This course is a continuation of the introduction and application of fundamental disciplines and postures in yoga. The title of this course was previously Philosophy and Practice of Yoga.

Section IV

Executive Officers

Bellanca, Rose   **2011**
President
- A.S. - Macomb Community College
- B.S. - Wayne State University
- M.Ed. - Wayne State University
- Ed.S. - Wayne State University
- Ed.D. - Wayne State University

Abernethy, Bill   **1993**
Interim, Vice President for Instruction
- B.A. - University of Oregon
- M.A. - University of Oregon
- Ph.D. - University of Wisconsin

William Johnson   **2013**
Vice President of Administration and Finance
- *B.A. - Michigan State University*
- *M.S.F. - Walsh College*

Blakey, Linda S.   **1988**
Vice President of Student & Academic Services
- B.S. - University of Michigan
- M.S. - University of Nevada at Las Vegas
- M.A. - University of Michigan

Flowers, Damon   **1994**
Assoc. V. P. of Facilities Development and Operations
- B.S. - Lawrence Technological University
- M.S. - Central Michigan University

Kruzel, Douglas P.   **2001**
Vice President of Human Resources
- B.S. - University of Toledo
- M.B.A. - University of Toledo

Lawson, Wendy   **2003**
Vice President of Advancement
- B.A. - University of Michigan
- M.B.A. - Eastern Michigan University

Mueller, Michelle   **2012**
Assoc. V. P. of Economic and Community Development
- A.F.A. - Brevard College
- B.A. - University of Michigan
- M.A. - Michigan State University
- A.B.D. - Central Michigan University

Ladha, Aminmohamed J.   **1995**
Chief Information Officer
- B.S. - Eastern Michigan University
- M.A. - Eastern Michigan University

Barkoff, Larry   **2013**
General Counsel
- B.A. - Michigan State University
- M.S. - Michigan State University
- J.D. - Wayne State University

Deans

Blair, Dena   **2006**
Interim, Dean of Humanities, Social and Behavioral Sciences
- B.A. - Adrian College
- M.A. - Eastern Michigan University
- Certificate - Specs Howard School of Broadcast Arts

Chisholm, Arnett   **1988**
Dean of Admissions and Student Life
- B.S. - University of Michigan
- M.A. - Eastern Michigan University

Donham, Marilyn   **2006**
Dean of Advanced Technology & Public Service Careers
- B.S. - Eastern Michigan University
- M.S. - Eastern Michigan University

Egan, James   **1989**
Dean of Distance Learning
- B.A. - Case Western Reserve University
- B.S. - Case Western Reserve University
- M.S. - University of Michigan
- M.S. - University of Michigan

Liu, Victor   **1991**
Dean of Learning Resources
- B.A. - University of South Carolina
- M.A. - Michigan State University
- M.I.L.S. - University of Michigan

Showalter, Martha   **1980**
Dean of Math, Science, and Health
- B.S. - Ohio State University
- B.A. - Ohio State University
- M.Ed. - University of Houston

Taylor, Patricia A.   **2002**
Dean of Support Services and Student Advocacy
- B.A. - Central Michigan University
- M.A. - Central Michigan University
- Ed.D. - Eastern Michigan University

Wilson, Rosemary   **1986**
Dean of Business and Computer Technologies
- B.S. - Milligan College
- M.B.A. - University of Notre Dame

Faculty/Professional Staff

Abbotts, Tammy   **2008**
Building Services Supervisor
- A.D. - Oakland Community College
- B.B.A. - Baker College

Abella, Mohammed   **1999**
Faculty: Mathematics
- B.S. - University of Bradford, England
- M.S. - University of Miami
- Ph.D. - University of Miami

Abrams, Terry   **1990**
Faculty: Digital Media Arts
- B.F.A. - Maryland Institute College of Art and Design
- E.D.M. - Boston University
- Certificate - Agfa-Gevaert

Adler, Sally (Sara Jane)   **1993**
Faculty: Public Service Careers - Child Care Professional
- B.S. - Pennsylvania State University
- M.S. - Pennsylvania State University
- Certificate - PA Dept. of Education

Aeilts, Larry   **1999**
Dean of Enrollment Management
- B.B.A. - Cleary College
- M.S. - Walsh College

Albach, Suzanne   **2007**
Faculty: Physical Sciences
- B.A. - Bowling Green State University
- B.S. - Eastern Michigan University
- M.S. - Mississippi State University

Aldrich, Michael   **2004**
Director of Systems Administration
- B.S. - University of Illinois- Champaign-Urbana
- M.S. - University of Florida

Anders Jr, Derek F.   **2012**
Faculty: Culinary Arts & Hospitality
- A.A. - Lansing Community College

Anders Sr, Derek F.   **1998**
Helpdesk Specialist
- A.A. - Lansing Community College
- A.A. - Washtenaw Community College
- Certificate - Washtenaw Community College

Anderson, Laurice A.   **1998**
Faculty: Performing Arts
- B.A. - Butler University
- M.F.A. - University of Michigan

Ankerson, Ingrid   **2012**
Faculty: Digital Media Arts
- B.A. - University of Wisconsin
- M.A. - University of Baltimore

Arnett, Bonnie   **2006**
Faculty: Academic Skills
- B.S. - Eastern Michigan University
- M.A. - Eastern Michigan University

Atkinson, John H.   **1997**
Faculty: Public Service Training
- B.A - University of Michigan
- M.P.A. - Eastern Michigan University
- J.D. - Detroit College of Law

Avinger, Charles   **1992**
Faculty: English/Writing
- B.S. - University of Alabama
- M.A. - University of Alabama

Bai, Jing   **2005**
Systems Analyst II
- B.S. - Beijing Shifan University
- M.S. - University of Detroit Mercy

Bailey, Rosanne   **2003**
Corporate Giving and Special Events Manager
- B.A. - Purdue University
- C.F.R.E. - Certified Fund Raising Executive

Baker, Jennifer L.   **1995**
Faculty: Digital Media Arts
- A.D. - Washtenaw Community College
- B.A. - University of Michigan
- M.F.A. - Rhode Island School of Design

Baker, Mark E.   **1994**
Firearms Range Master
- A.D. - Henry Ford Community College

Ballard, Bayyinah   **2007**
Assistant Director of Financial Aid
- A.D. - Davenport University
- B.B.A. - Davenport University

Barrie, Maryam   **2002**
Faculty: English/Writing
- A.A. - Washtenaw Community College
- B.A. - University of Michigan
- M.A. - Eastern Michigan University

Barsch, Rachel   **2004**
Events Coordinator
- B.S. - Eastern Michigan University

Bartha, Paula   **2001**
Career Education Coordinator
- B.S. - Wayne State University

Batell, Mark F.   **1984**
Faculty: Mathematics
- B.A. - Knox College
- M.A. - University of Michigan

Benin, Michelle   **1998**
Labor Relations Coordinator

    C.L.R.P. - Certified Labor Relations Professional - Michigan State

Bennett, Victoria   **2006**
Academic Administrative Associate Business and Computer Technology

    B.S. - Grand Valley State University

Bernard, Madelyn   **2009**
Employment Services Manager

    B.B.A. - Eastern Michigan University

Bhattacharyya, Babli   **2006**
Systems Analyst I

    B. S. - University of Michigan

Bhattacharyya, Nilotpal   **1999**
System Engineer

    B.M.S. - University of Gaubati

Billings, Kim   **2008**
Logistic Director of UA Programs & Services

    B.A. - Grand Valley State University
    M.S. - Boston University

Bishop, Sherry   **2013**
Faculty: Clinical Medical Assisting

Bishop, Todd   **2001**
Design and Construction Services Manager

    Management Certificate - State of Michigan

Bogue, Robert A.   **1984**
Instructional Lab Assistant: Automotive Services

    A.D. - Washtenaw Community College
    B.S.Ed. - University of Michigan
    Certificate - State of Michigan
    Certificate - ASE Master Automobile Technician

Bolton, Jason   **2008**
Graphic Designer

    B.A. - College for Creative Studies

Boluyt, Marvin   **2009**
Faculty: Life Sciences

    B.S. - Grand Valley State University
    M.S. - University of Michigan
    Ph.D. - University of Michigan

Bracco, Patrick   **2000**
Director of Systems Development

    B.S.E. - University of Michigan
    M.S.E. - University of Michigan

Brown, Cynthia   **2010**
Faculty: Nursing

    B.S.N. - College of St. Joseph
    M.S.N. - Eastern Michigan University

Brundage, Eleanor   **2009**
Student Resources/Women's Center Case Manager

    A.D. - Washtenaw Community College
    B.S. - Eastern Michigan University
    M.A. - Eastern Michigan University

Burge, Joshua   **2008**
Director of Sprinkler Fitter Apprentice Education

    A.D. - Macomb Community College
    B.A. - University of Michigan

Burgen, Clarence   **1987**
Mechanical Systems/Electrical Services Manager

Burgess, Steven   **2011**
Building Services Manger

    B.S. - Eastern Michigan University
    J.D. - Thomas Cooley Law School

Burke, Starr   **2000**
Faculty: Behavioral Sciences

    B.A. - Wayne State University
    M.A. - Eastern Michigan University
    Ph.D. - California Coast University

Burns-Coral, Mary   **2010**
Faculty: Nursing

    B.S.N. - Ferris State University
    M.S.N. - Phoenix University
    CNE - National League for Nursing

Butcher, Kathleen   **1989**
Faculty: Physical Sciences

    B.S. - St. Mary's College
    M.S. - Wayne State University

Buzas, Cristina   **2010**
New Student Orientation Manager

    B.A. - University of Michigan
    M.A. - Bowling Green State University

Byrd, Soyini   **2005**
Payroll Manager

    B.S. - Madonna University
    M.S.M. - Walsh College

Byrne, Cheryl   **2002**
Faculty: Business

    B.S. - Ohio State University
    M.B.A. - Pepperdine University
    Ph.D. - Claremont Graduate University

Cameron, Derris   **2012**
Talent Development Specialist

Carlisle, Annessa   **2012**
Executive Director of Public Relations and Marketing

    B.A. - Wayne State University
    M.A. - Michigan State University

Carter, Justin   **2009**
Faculty: Automotive Services
> B.A. - Wayne State University

Chaudhri, Anita   **2003**
Testing Center Manager
> B.Sc. - Haryana Agricultural University India
> B.Ed. - Kurukshetra University India
> M. A. - Kurukshetra University India
> Graduate Certificate - Eastern Michigan University

Chiappetta, Lorraine   **2003**
Faculty: Nursing
> B.S.N. - College of New Jersey
> M.S.N. - State University of New York - Buffalo
> R. N. - State of Michigan

Clarke, Nagash   **2007**
Faculty: Physical Sciences

Claydon, Andrew   **2001**
System Engineer/User Support

Cocco, Richard   **2000**
Classroom Technology Coordinator
> A.D. - Washtenaw Community College

Concannon, Breege   **2003**
Faculty: Physical Sciences
> B.S. - University of Ulster - Northern Ireland
> Ph.D. - University of South Carolina

Cook, Kathleen   **2006**
Faculty: Physical Therapy
> B.S. - Simmons College
> Doctorate - Simmons College
> Certificate - Physical Therapy

Courvoisier, Lori   **1999**
Conference Services Coordinator
> B.S. - Michigan State University

Crudup, Denise   **2006**
Faculty: Academic Skills
> B.S. - Eastern Michigan University
> M.A. - College of St. Catherine
> M.A. - Eastern Michigan University
> Graduate Certificate - University of Cincinnati

Culverhouse, David   **2010**
Security Patrol Officer

Currie, Kathy   **1989**
Director of Student Records
> A.D. - Washtenaw Community College

Daily, Mark   **2009**
Faculty: Motorcycle
> Certificate - Harley Davidson University

Daniels, Cheryl   **1990**
Employment Coordinator
> A.A. - Schoolcraft College
> B.A. - Concordia College

David, Lawrence   **2011**
Faculty: Mathematics

Davies, Julianne   **2011**
Faculty: Business

Davis, Jason   **2007**
Faculty: Mathematics
> B.S. - Eastern Michigan University
> M.A. - Eastern Michigan University

Day, Allen   **2009**
Faculty: Automotive Services
> A.D. - Washtenaw Community College
> B.A. - Northern Michigan University

Dedhia, Hiralal   **1987**
Faculty: Health Science
> A.D. - Washtenaw Community College
> B.S. - University of Poona
> M.S. - Madonna University

Deinzer, Carol   **1999**
Faculty: Culinary Arts and Hospitality Management
> A.C. - Monroe County Community College
> B.A. - Concordia University
> CEPC - American Culinary Federation

Dentel, Susan   **2009**
Faculty: Life Sciences
> B.S. - Ferris State University
> M.S. - Eastern Michigan University

Deron, Shawn   **2009**
Faculty: Motorcycle
> Certificate - Harley Davidson University

Desrosiers, Jacques   **2010**
Director of Campus Safety and Security
> A.A. - Henry Ford Community College
> B.S. - Wayne State University
> Certificate - FBI National Academy 196th Session National Academy 196th Session

Diamond, Nicole   **2011**
Professional Service Faculty Advisor:
International Student Center
> A.A. - Santiago Canyon College
> B.A. - Chapman University
> M.S. - California State University
> Certificate - TESOL

Dickert, Tyson   **2006**
System Engineer/User Support
- A.A.S. - Washtenaw Community College
- A.A.S. - Washtenaw Community College
- B.S. - Eastern Michigan University
- Certificate - Microsoft Professional
- Certificate - Apple Certified Support Professional

Dixon, Barton   **1995**
Security Patrol Officer

Do, Khiet   **2005**
Instructional Lab Assistant: Industrial Technology
- B.S. - Eastern Michigan University
- Donahey, Jeffrey   1984
- Faculty: Industrial Technology
- B.S. - University of Michigan

Donahey, Jeffrey   **1984**
Faculty: Industrial Technology

Downey, Patrick   **1994**
Conference Services and Special Events Manager

Dubiel, Theresa   **2006**
Faculty: Nursing
- B.S.N. - Michigan State University
- M.S.N. - Michigan State University

Duff, Michael   **2009**
Faculty: Automotive Services
- A.D. - Washtenaw Community College
- B.S. - Eastern Michigan University
- M.A. - Mary Grove College

Eastman, Debra   **2010**
Clinical Instructor: Nursing
- B.S.N. - Mercy College of Detroit
- M.S.N. - Michigan State University

Eccleston, Gloria   **2004**
Director of FlexEd and Special E-Learning Projects
- A.A.S - Washtenaw Community College
- B.B.A. - Cleary University

Elliott, Joanna   **2006**
E-Learning Technologies Coordinator
- A.A. - Washtenaw Community College
- B.S. - Eastern Michigan University

Everin, William J.   **1997**
Research Associate and Survey Manager
- B.S. - Northwestern University
- M.S. - Purdue University

Faulkner, Mary K.   **1983**
Executive Assistant to the Board of Trustees
- A.D. - Washtenaw Community College
- B.B.A. - Eastern Michigan University

Fauri, Greta   **1977**
Student Services Advisor: Children's Center
- B.A. - Adrian College

Fayaz, Amir   **2000**
Faculty: Physical Sciences
- B.S. - Eastern Michigan University
- M.S. - Eastern Michigan University

Ferguson, Russell   **2000**
Faculty: Automotive Services
- B.S. - Central Michigan University
- M.L.S. - Eastern Michigan University
- A.S.E. - Certified Master Automobile Technician

Ferrario, Nancy   **2007**
Faculty: Foreign Languages
- B.A. - St. Louis University
- M.A. - St. Louis University

Fillinger, Barbara   **2001**
Director of Budget, Purchasing, and Auxiliary Services
- B.S. - Oakland University
- M.S. - Walsh College

Fine, Diane   **2013**
Online Learning Developer

Finley, Cheryl R.   **2007**
Student Resource and Women's Center Case Manager
- B.A. - Michigan State University
- M.A. - Wayne State University

Fisher, Tamika   **2010**
Certification and Outreach Coordinator

Fitzpatrick, David J.   **1996**
Faculty: Social Sciences
- B.S. - United States Military Academy
- A.M. - University of Michigan
- Ph.D. - University of Michigan

Flack Jr., Joseph L.   **1990**
Faculty: Business/Accounting
- B.A. - Eastern Michigan University
- M.B.A. - University of Detroit
- J.D. - Detroit College of Law

Foster, Brenda   **1997**
Faculty: Mathematics
- A.A. - Seattle Central Community College
- B.A. - University of Washington
- M.A. - University of California

Foster, Connie S.   **1990**
Faculty: Radiography
- A.D. - Washtenaw Community College
- B.S. - Central Michigan University
- M.A. - Eastern Michigan University

Fournier, Allison   **2010**
Faculty: Humanities
> B.S. - Eastern Michigan University
> M.A. - Eastern Michigan University

Freeman, Bryan   **2013**
Director of Web Services
> B.S. - University of Michigan

Galea, Michael   **1998**
Faculty: Computer Instruction
> B.S. - Wayne State University
> M.A. - Wayne State University

Gannon-Boss, Alice   **2010**
Faculty: Culinary Arts and Hospitality Management
> A.S. - Washtenaw Community College
> A.S. - Washtenaw Community College
> B.B.A. - Cleary University
> M.S. - Eastern Michigan University
> CHE - American Hotel and Lodging Educational Institute
> IOC - Ferris State University

Garcia, Anne   **2002**
Faculty: Behavioral Sciences
> B.S. - California State University - Fresno
> B.A. - California State College - San Bernardino
> M.S. - San Diego State University
> Ph.D. - University of California, San Francisco

Garey, Michelle   **2001**
Faculty: Foreign Languages
> B.A. - University of Michigan - Flint
> M.A. - Ohio State University

Garrett, Joy L   **2007**
Director of Curriculum and Assessment
> B.S. - Ohio University
> M.S. Ed - The University of Toledo

Gave, Keith   **2008**
Student Voice Newspaper Coordinator
> B.A. - Kansas State University

George-Sturges, Cassandra   **2003**
Faculty: Behavioral Sciences
> M.A. - Eastern Michigan University
> M.A. - Wayne State University
> Psy. D. - California Coast University

Gerlitz, Frank   **1991**
Faculty: Mathematics and Physics
> B.S. - University of Wisconsin
> M.S. - University of Wisconsin
> Ph.D. - University of Wisconsin

Geyer, Philip   **1998**
Faculty: Computer Instruction
> B.S. - University of Michigan
> M.S. - University of Michigan

Ghrist, William   **1994**
Energy & System Integration Manager
> A.A.S. - Washtenaw Community College
> Builders License - State of Michigan

Gibson, Maxine   **1990**
Faculty: English/Writing
> B.S. - Eastern Michigan University
> M.A. - University of Michigan

Gill, Kanwarjit   **2010**
Systems Analyst II
> B.S. - Eastern Michigan University

Gilmore, Rhonda   **2009**
Counselor: Counseling, Career Planning and Placement
> B.S. - Eastern Michigan University
> M.A. - Eastern Michigan University

Good, Kristin   **2001**
Faculty: Mathematics
> B.A.Ed. - University of Michigan
> M.A. - University of Notre Dame

Goodman, Gregory   **2005**
Campus Safety and Security Supervisor
> A.A.S. - Washtenaw Community College
> Certificate - Washtenaw Community College

Gordon, Ross   **2010**
Director of Career Service Initiative
> B.B.A. - Eastern Michigan University

Gottschang, Kelley   **2004**
Faculty: Digital Media Arts
> B.S. - Eastern Michigan University
> M.A. - Wayne State University

Greaves, Valerie   **2007**
Faculty: Nursing
> B.S.N. - Eastern Michigan University
> M.S.N. - Madonna University
> Certificate - State of Michigan

Green, Margaret   **2001**
Faculty: English/Writing
> B.A. - University of Michigan
> M.Ed. - American Intercontinental University

Griffith, Michael   **2000**
UA/Target Marketing Coordinator
> B.A. - University of Toledo

Groce, Kimberly   **1999**
Counselor: Counseling, Career Planning and Placement
> B.S.W. - University of Detroit
> M.A. - Eastern Michigan University
> L.P.C. - State of Michigan

Gudsen, Neil   **2000**
CIS/BOS Program Manager

    B.A. - University of Michigan

    J.D. - University of Detroit

Guerrero, Debra   **2002**
Director of Learning Support Services

    B.A. - Wayne State University

    M.A. - California State University, San Bernardino

    L.P.C. - State of Michigan

    Certification - Rehabilitation Counselor

Hackmann, Bruce   **1999**
Faculty: Humanities

    B.A. - Eastern Michigan University

    M.A. - Eastern Michigan University

Hageman, Rebecca   **2000**
Information Technology Support Specialist

    A.A.S. - Washtenaw Community College

    B.B.A. - Cleary College

    B.A. - University of Phoenix

Hagen, Trudi   **2003**
Director of Children's Center

    B.S. - Eastern Michigan University

    M.S. - Eastern Michigan University

Hagood, Robert M.   **1997**
Faculty: Physical Sciences

    B.S. - Eastern Michigan University

    M.S. - Eastern Michigan University

Hale, Jessica   **2007**
Faculty: Academic Skills

    B.A. - University of Michigan

    M.A. - University of Michigan

    Ed.D. - Eastern Michigan University

Halliday, Geoffrey B.   **1997**

System Engineer

    A.D. - Washtenaw Community College

Hasselbach, Clarence   **2000**
Faculty: Computer Instruction

    B.S. - Michigan State University

    M.S. - University of Southern California

    M.A. - University of California Berkeley

Hatcher, Robert   **2000**
Faculty: Mathematics

    B.A. - University of Michigan

    M.S. - University of Michigan

Hawkins, Janet L.   **1977**
Associate Director of Public Affairs

    A.D. - Washtenaw Community College

    B.B.A. - Eastern Michigan University

    M.A. - Eastern Michigan University

    A.P.R. - Public Relations Society of America

Heidebrink, Gregg S.   **1995**
Faculty: Social Sciences

    B.A. - Iowa State University

    M.A. - Southern Methodist University

Heise, Anne E.   **1993**
Faculty: Life Sciences

    B.A. - Swarthmore College

    M.S. - University of Vermont

Hemsteger, Thomas   **1992**
Faculty: Automotive Services

    A.A.S. - Ferris State University

    B.S. - Eastern Michigan University

    M.A. - Eastern Michigan University

Herrera, Terri   **2002**
Faculty: Culinary Arts and Hospitality Management

    B.A. - Siena Height College

    M.S. - Eastern Michigan University

Hesterly, Veda   **2009**
Security Patrol Officer

Hill, Patricia   **2005**
Faculty: Physical Therapy

    B.S. - University of Michigan

    M.A. - University of Michigan

Hong, Ji-Hee   **2006**
Research Associate

Hoth, Bradley   **1987**
Professional Services Personnel: Vocational Technology

    A.A. - Henry Ford Community College

    B.A. - Michigan State University

    M.A. - Eastern Michigan University

Howard, Nancy   **2001**
Talent Development Manager - IT

    A.A. - Niagara County Community College

    B.S. - Buffalo State College

    M.S. - Buffalo State College

    Ed. Sp. - University of Missouri-Columbia

Hughes, Patrick   **1998**
Director of Network and Communications

    A.S. - Henry Ford Community College

    B.S. - Madonna College

Hunt, Nicholas   **2010**
Information Technology Support Specialist

    A.A.S. - Washtenaw Community College

Hunter, Shana   **2008**
Financial Aid Specialist

    B.A. - Eastern Michigan University

    M.S. - Eastern Michigan University

Hurns, Kimberly   **2003**
Faculty: Business
B.B.A. - Eastern Michigan University
M.B.A. - Loyola University
D.Mgt. - Walsh College

Jackson, Jennifer   **2002**
Faculty: Humanities
B.A. - Concordia University
M.S. - Eastern Michigan University

Jackson, Lawrence   **1998**
Director of Public Service Training
B.S. - Wayne State University
M.S. - Michigan State University
Certificate - State of Michigan

Jacobs, Sherrie   **2001**
Campus Safety and Security Dispatcher Supervisor
Certificate - Continuum Configuration for Security Controls

Jaffe, Tracy Leigh-Komarmy   **1993**
Faculty: Performing Arts
B.S. - Eastern Michigan University
M.A. - Eastern Michigan University

James, Monique   **2009**
Director of Community Enrichment
B.A. - Grand Valley State University
M.S.W. - University of Michigan

Jenkins, Joyce   **1998**
Faculty: Business Office Systems
B.S. - Michigan State University
M.L.S. - Eastern Michigan University
Certificate - California State Hayward

Jett, Sukanya J.   **1992**
Director of Admissions
A.A. - Cottey Junior College
B.A. - Radford University
M.S.A. - Central Michigan University

Ji, Shiping   **1999**
Database Administrator
B.S. - Eastern Michigan University
Certified Database Administrator- Oracle7.3
Certified Database Administrator- Oracle8

Johnson, Charles   **1998**
Faculty: Humanities
B.A. - Oakland University
M.A. - Michigan State University
Ph.D. - Michigan State University

Johnson, Darrin   **2009**
Labor and Employee Relations Coordinator
M.A. - Eastern Michigan University
M.S. - Eastern Michigan University

Johnson, Kenneth   **2006**
Record Drawings Coordinator
A.D. - Washtenaw Community College
A.D. - Western Michigan University

Johnston, Mark   **1990**
Faculty: Business/Accounting
B.B.A. - Eastern Michigan University
M.S. - Walsh College

Johnston, Trennis   **1995**
Employment Services Coordinator
A.A. - Washtenaw Community College
B.A. - Eastern Michigan University
M.P.A. - Central Michigan University

Jorgensen, Melanie   **2005**
Safety Compliance Manager
B.A. - University of Michigan
OSHA Specialist Certification - Occupational Health and Safety

Kapp, George   **1970**
Faculty: Physical Sciences
A.D. - Washtenaw Community College
B.S.E. - University of Michigan

Kay II, Glenn   **2009**
Faculty: Welding
A.D. - Washtenaw Community College
B.B.M. - Cleary College

Keck, Melissa   **2006**
Faculty: Nursing
B.S.N - Madonna University
M.S.N. - Madonna University
M.S.B.A. - Madonna University

Keller, Laurel   **2002**
UA Distance Learning Administrator
B.A. - Michigan State University

Kennedy, Bethany   **2007**
Director of Access Services
B.S. - Eastern Michigan University
M.L.I.S. - Wayne State University

Kerr, John   **1993**
Faculty: Social Sciences
B.S.Ed. - Central Michigan University
M.A. - Western Michigan University
M.A. - Western Michigan University

Kier, G. Daniel   **2001**
Faculty: Digital Media Arts
B.A. - Michigan State University
M.A. - Eastern Michigan University

Kilgore, Robert   **2002**
Instructional Lab Assistant: Electricity/Electronics
A.S - Washtenaw Community College

King, Linda   **1998**
Director of Administration and Outreach
- B.A. - University of Michigan
- M.A. - University of Michigan

King, Michael   **2002**
Faculty: Mathematics
- B.A. - Western Michigan University
- M.Ed. - Wayne State University

Kirkland, Reche   **2012**
Systems Analyst III
- B.S.E. - University of Michigan

Kish, Glenn   **2003**
Systems Analyst III
- B.B.A. - University of Toledo

Kissel, Julie   **2004**
Faculty: English/Writing
- B.S. - Eastern Michigan University
- M.A. - Eastern Michigan University

Klapper, Scott   **2011**
Administrator for United Association Programs and Services

Klemmer, Nichole   **2012**
Faculty: Mathematics
- B.S. - Eastern Michigan University
- M.A. - Marygrove College

Kontry, Michael   **2010**
Faculty: HVACR
- A.A.S. - Washtenaw Community College

Krantz, Carrie   **1992**
Faculty: English/Writing
- B.S. - Edinboro University of Pennsylvania
- M.A. - Bowling Green State University

LaFayette, Charles   **2013**
Program Manager TAA-CCCT

LaHote, Randy   **1992**
Faculty: Social Sciences
- B.A. - University of Toledo
- M.A. - University of Toledo

LaPointe, Cheryl   **2003**
Compensation and Benefits Coordinator
- A.A. - Monroe County Community College
- B.A. - Spring Arbor University
- PHR Certificate - Society for Human Resource Management

Lawrence, John   **2003**
Faculty: Performing Arts

Lee, Michael N.   **1998**
Computer Commons Specialist
- A.A. - Washtenaw Community College

Leshkevich, Peter   **2006**
Director of Student Development and Activities
- A.A.S. - Washtenaw Community College
- B.B.A. - Cleary University
- M.B.A. - Cleary University
- Certificate - Washtenaw Community College
- Certificate - Washtenaw Community College

Leslie, Daniel   **2007**
Space Planner
- A.D. - Baker College
- Certificate - AutoCAD
- Certificate - Green Roofs for Healthy Cities

Levitt-Phillips, Hava   **2010**
Faculty: English/Writing
- B.S. - Eastern Michigan University
- M.A. - Eastern Michigan University

Lewis, James   **2000**
Faculty: Electricity/Electronics
- B.S. - Southern Illinois University
- M.A. - Eastern Michigan University
- CISSP, CISA, CCNA, CCAI, CEH, CCE Computer Systems Technology- Keesler School of Applied Aerospace Science
- Graduate Certificate- Oregon State University- Computer Forensics

Libstorff, Richard   **2012**
Security Patrol Officer

Lindemann, Cristy   **2006**
Faculty: Construction Technology Programs
- B.S. - Eastern Michigan University

Loskowski, Amy   **2012**
Faculty: Business Office Systems

Lowing, Robert   **2009**
Faculty: Auto Body
- Certificate - State of Michigan

Lu, Yin   **1994**
Faculty: Mathematics
- B.S. - National Taiwan University
- M.S. - National Taiwan Normal University
- Ph.D. - State University of New York, Buffalo

Lutz, Geoffrey A.   **1986**
Systems Analyst III
- B.S. - University of Michigan

MacGregor, Sherry S.   **1994**
Faculty: Nursing
- B.S.N. - University of Michigan
- M.S.N. - Wayne State University
- Diploma - Henry Ford Hospital School of Nursing

Mack, Dale   **2009**
Instructional Lab Assistant: HVACR

     A.A.S. - Washtenaw Community College

     Certificates - HVAC Excellence

     Certificates - MSU Labor Program Service

     Certificate - Local 80 Skills Training Program

Malnar, Scott   **2009**
Faculty: Auto Body

     A.A.S. - Ferris State University

     A.A.S. - Washtenaw Community College

Manoukian, Lisa   **2006**
Faculty: Mathematics

     B.S. - University of Michigan - Dearborn

     M.A. - Oakland University

Mansour, Khaled   **2000**
Faculty: Computer Instruction

     B.S. - Yarmouk University

     M.S. - Western Michigan University

Marbury, Nichole   **2010**
Information Systems Training and Support Specialist

     B.B.A. - Davenport University

     M.A. - Siena Heights University

     Certificate - Career Development Facilitator

     Certificate - Microsoft Office Specialist

Marinkovski, Elizabeth   **1999**
Human Resource Management Specialist Project Coordinator

     A.D. - Washtenaw Community College

     A.D. - Washtenaw Community College

     B.A. - Eastern Michigan University

     Certificates - Washtenaw Community College

     C.H.R.S. - Certified Human Resource Specialist

Martin, Lynn   **2008**
Controller

     B.B.A. - University of Notre Dame

     C.P.A. - State of Michigan

Maxwell, Bruce   **2007**
Web Writer

McCarthy, Sandra   **1999**
Librarian: Learning Resource Center

     B.A. - Wayne State University

     M.L.S. - Wayne State University

     M.A. - University of Detroit Mercy

McClure, Carrie   **2007**
Financial Aid Coordinator

     B.A. - Michigan State University

     B.S. - Eastern Michigan University

McCowin, Jerrell   **2011**
Counselor: Counseling, Career Planning and Placement

McCracken, Alexandra   **2000**
MPOD Coordinator

     A.D. - Washtenaw Community College

     B.B.A. - University of Michigan, Flint

McGuire, Belinda G.   **1988**
Faculty: Humanities

     A.S. - Monroe County Community College

     B.F.A. - Eastern Michigan University

     M.Ed. - University of Toledo

McLean, Coley   **2004**
Faculty: Welding/Fabrication

     B.F.A. - Center for Creative Studies

     Certificate - American Culinary Federation

Metz, Brad   **2009**
Faculty: Life Sciences

     B.S. - Eastern Michigan University

Mihaly, Christine   **2003**
Director of Human Resource Services

     B.S. - Indiana University of Pennsylvania

     PHR Certificate - Society for Human Resource Management

Mikkelson, Shawn   **2004**
Purchasing and Budget Analyst

     Certificate - Washtenaw Community College

Miller, Jean   **1989**
Faculty: English/Writing

     B.A. - Marygrove College

     M.A. - University of Tulsa

Mir, Shazia   **2013**
Web Developer I

Mohrlock, Kenneth   **2010**
Treasury Manager

     B.A. -Ferris State University

Mohrlock, Trudi   **2008**
Learning Support Services Office Coordinator

Moore, Harriette   **2002**
Faculty: Behavioral Sciences

     B.A. - Tuskegee University

     M.A. - Loyola University - Chicago

Morningstar, Justin   **2008**
Instructional Lab Assistant: Auto Services

Morrison, Julie   **2011**
Executive Associate to the President

     B.M. - University of Michigan

     M.M - Northwestern University

     Ph.D. - Northwestern University

Mosquera, Jason   **2009**
Instructional Lab Assistant: Auto Body

Motley, LaTonya   **2013**
Instructional Designer Distance Learning

Mourad, Roger   **1996**
Director of Institutional Research
   B.A. - University of Michigan
   M.S. - University of Michigan
   J.D. - University of Michigan
   Ph.D. - University of Michigan

Mullalond, Mary   **2010**
Faculty: English/Writing
   B.A. - University of Portland
   M.A. - Simmons College
   M.Ed. - University of California

Naylor, Michael L.   **1994**
Faculty: Performing Arts
   B.M. - University of Miami
   M.M. - University of Miami
   M.A. - University of Michigan
   Ph.D. - University of Michigan

Neal, Leslie   **2009**
Student Resources/Women's Center Case Manager
   B.S. - Central State University
   M.Ed. - University of Cincinnati

Nelson, Lisa   **2002**
Curriculum Analyst
   B.A. - Marygrove College

Nelson, Warren   **2008**
Campus Events and Media Production Coordinator
   B.S. - University of Michigan

Nelson, William H.   **1992**
Faculty: Radiography
   A.D. - Washtenaw Community College
   B.S. - Western Michigan University
   M.A. - University of Michigan

Neuman, Jodi   **2009**
Clinical Instructor: Dental
   A.A.S. - Washtenaw Community College
   Certificate - Washtenaw Community College
   B.A.S. - Siena Heights University
   CDA - Dental Assisting National Board
   RDA - Michigan Board of Dentistry

Nipper, John   **2013**
JATC669 Web Administrator

Norris, Kristy   **2007**
Faculty: Behavioral Sciences
   B.A. - Western Kentucky University
   M. A. - Western Kentucky University

Norwood, Mimi Y.   **1993**
Faculty: Behavioral Sciences
   A.D. - Washtenaw Community College
   B.S. - Wayne State University
   M.S.W. - University of Michigan
   M.A. - Morehead State University

O'Neil, Michele   **2010**
FlexEd Program Manager
   B.B.Ed. - Eastern Michigan University
   M.S. - Eastern Michigan University
   Certified Internet App. Developer, Oracle Developer Release 6/61- Oracle Corp.

Orbits, Elizabeth   **2001**
Student Resources/Women's Center Manager
   B.A. - University of Michigan
   M.A. - Eastern Michigan University
   M. A. - Eastern Michigan University
   LPC- State of Michigan
   NCC- National Board for Certified Counselors

Ortega, Maria   **1992**
Faculty: Behavioral Sciences
   B.S. - Central Michigan University
   M.A. - Michigan State University

Ortiz, Joe   **2006**
Instructional Lab Assistant: Auto Body

Painter, Corinne   **2006**
Faculty: Humanities
   A.D. - Bellevue Community College
   B.A. - Seattle University
   M.A. - Ohio University
   Ph.D. - Loyola University

Pardon, Joshua   **2000**
Director of Media Services
   B.S. - Eastern Michigan University
   M.S. - Eastern Michigan University

Parker, Karen J.   **1989**
Accounting Manager
   A.D. - Washtenaw Community College
   B.B.A. - Eastern Michigan University

Patterson, Nicholas   **2012**
Talent Development Specialist

Pearsall, Robert   **2013**
Infrastructure Technician

Peck, Joshua P.   **1996**
System Engineer/User Support
   A.D. - Washtenaw Community College

Penird, Thomas   **2000**
Faculty: Industrial Technology
   A.T.S. - Washtenaw Community College
   B.S. - Eastern Michigan University

Penner, Charles A.   **2002**
Regional Director of MI Small Business Development Center
- B.A. - Hampshire College
- M.P.P.M. - Yale University

Perez, Laura   **1993**
Faculty: Mathematics
- B.S. - Bowling Green State University
- M.A. - Bowling Green State University

Perkins, Thornton   **2002**
Faculty: Social Sciences
- B.A. - Wayne State University
- M.A. - California State University - Los Angeles

Petty, Dale   **1994**
Faculty: Electricity/Electronics
- B.S.E.E. - State University of New York at Buffalo
- M.S.C.E. - Case Western Reserve

Phillips, Robert   **1998**
Records and Information Management Manager
- A.D. - Washtenaw Community College

Phillips, Taghreed   **2002**
Information Technology Support Specialist
- B.A. - Al-Mustansiriya University

Pirooz, Azadeh   **2010**
Accountant
- B.B.A. - Eastern Michigan University

Pobursky, Joel   **1991**
Campus Safety and Security Supervisor
- A.D. - Washtenaw Community College
- B.R.E. - Midwestern Baptist College
- EMT Certificate - State of Michigan

Politi, Sharyl   **2010**
Faculty: Culinary Arts and Hospitality
- A.D. - Oakland Community College

Popovich, James   **1999**
Faculty: Industrial Technology
- B.S. - LeTourneau College
- M.S. - Ferris State University

Poslaiko, Karen   **2004**
Instructional Lab Assistant: Life Sciences

Pullins, Les   **2003**
Faculty: HVAC
- A.A.S. - Ferris State University Michigan
- B.A. - National Labor College
- State of Michigan Licenses - Mechanical Contractor and Journey Plumber City of Dearborn
- Licenses - Refrigeration Engineer first class and Stationary Engineer

Pung, Barnaby   **2013**
Career Development Specialist
- B.A. - Western Michigan University
- M.S.L.S. - University of Kentucky
- Ph.D. - Michigan State University

Quail, Michael E.   **1994**
Faculty: Mathematics
- B.A. - Wayne State University
- M.A. - Eastern Michigan University
- M.S.W. - University of Michigan

Rader, Rosemary   **1994**
Faculty: Physical Sciences
- B.S. - University of Wisconsin-Oshkosh
- Ph.D. - Purdue University

Redondo, Juan C.   **1994**
Faculty: Foreign Languages
- M.A. - University Complutense - Madrid
- M.A. - University of California at Berkeley
- M.A. - University of Wisconsin

Reichert, William   **2002**
Faculty: Networking
- B.S. - Purdue University

Remaley, Dana   **2003**
Systems Analyst III
- B.S. - University of Michigan

Remsen, I.B.   **2010**
Faculty: Humanities
- B.A. - Antioch College

Rinke, John   **1992**
Director of Support Services
- B.S.Ed. - Central Michigan University
- M.A. - Michigan State University
- Ed.S. - Central Michigan University
- Ed.D. - Western Michigan University

Rivers, Lynn   **2004**
Faculty: Social Sciences
- B.A. - University of Michigan
- J.D. - Wayne State University

Roberts, Melina   **2010**
Faculty: Nursing
- B.S.N. - University of Michigan
- M.S.N. - Eastern Michigan University
- R.N. - State of Michigan

Robinson, Todd   **1996**
Building Maintenance Manager
- A.A.S. - Washtenaw Community College
- B.S. - Eastern Michigan University

Rombes, Lisa 2002
Faculty: Mathematics

  B.S.Ed. - Bowling Green State University

  M.Ed. - Penn State University

Roof, Rex 2000
Lead System Engineer

  A.D. - Washtenaw Community College

Roque, Francisco 1999
Lead System Engineer

Rumsey, Krissa 2003
Director of Advancement

  B.A. - Concordia University

  M.S. - University of Michigan

Rush, Joseph 2002
Faculty: Social Sciences

  B.A. - Pennsylvania State University

  M.A. - University of St. Andrews - Scotland

  Ph.D. - University of Oregon

Salminen, April 2010
Security Patrol Officer

  Certificate - Correctional Science Program

  C.E.R.T. - Community Emergency Response Team

Salter, Vickie 1999
Faculty: Nursing

  A.D.N. - Wayne County Community College

  B.S.N. - Wayne State University

  M.S.N. - University of Phoenix

  Ph.D. - Capella University

  R.N. - State of Michigan

Samuels, Kiela 2012
Faculty: Pharmacy Technology

Scheffler, Amanda 2010

Faculty: Welding/Fabrication

  A.A.S. - Washtenaw Community College

  A.A.S. - Washtenaw Community College

  A.A.S. - Washtenaw Community College

  B.B.A. - Cleary University

  License -Journeyman Plumber

Scheiber, Kory 2013
Intake Consultant/Program Specialist MSBDC

Schmall, Sally 2012
Organizational Development Manager

Schultz, Gary L. 1984
Faculty: Industrial Technology

  A.D. - Washtenaw Community College

  B.S. - Eastern Michigan University

  M.S. - Eastern Michigan University

Schuster, Alicia 2007
Scholarship and Alumni Coordinator

  B.S. - Eastern Michigan University

Schwab, Tracy 2007
Faculty: Physical Sciences

  B.S. - Walsh University

  Ph.D. - Wayne State University

Scott, Kathleen 1971
Librarian: Learning Resources

  B.A. - University of Iowa

  M.A. - University of Iowa

Sepac, Diana 2008
Director of Extension Services and Distance Learning

  A.A. - Oakland Community College

  B.S. - Michigan State University

  M.S. - Eastern Michigan University

Shaper, Scott 2011
Faculty: Digital Media Arts

Shelton, Eleanor 2005
Community Relations Manager

  B.A. - Michigan State University

  M.A. - Eastern Michigan University

Shepherd, Kimberly 2002
Faculty: English/Writing

  B.A. - Michigan State University

  M.A.T. - Oakland University

  Ph.D. - Oakland University

Shoemaker, Jeffrey 2005
Campus Safety and Security Supervisor

  A.A.S. - Ferris State University

  Certificate - Basic Police Academy

  C.E.R.T. - Community Emergency Response Team

Shuldin, Julia 2001
System Engineer

  B.S. - Dnepropetrovsk St. University, Ukraine

  M.S. - Lawrence Tech University

Shute, Michael 2007
Faculty: Motorcycle Service

  Certificate - Harley Davidson University

Singh, Dawn 2006
Instructional Designer

  B.S. - Purdue University

  M.A. - Indiana University

Skufis, James 2006
Clinical Instructor: Radiography

  A.D. - Washtenaw Community College

  B.A. - Eastern Michigan University

  M.A. - Eastern Michigan University

Slayton, Jared 2006
Online Technology Specialist II

Sobbry, William (Gary) 2003
Faculty: Automotive Body

  Mastery Certificate: Auto Repair Washtenaw Community College

Sommerfeld, Courtney 2001
Enrollment Services Coordinator
   A.A. - Washtenaw Community College
   A.G.S - Washtenaw Community College

Sparklin, Claire 2010
Faculty: Humanities
   M.A. - Wayne State University

Sprague, Kristina 2003
Faculty: Dental
   B.S. - Central Michigan University
   C.D.A. - Dental Assisting National Board
   R.D.A. - Michigan Board of Dentistry

St Amour, Mark 2012
Veteran Student Advisor
   B.S. - Western Michigan University
   M.A. - Western Michigan University

Stafford, Kathryn 2001
Student Services Information Officer
   A.A. - Kellogg Community College
   B.A. - University of Michigan
   M.B.A. - Michigan State University

Stark, Rene' 2010
Faculty: Nursing
   A.D.N. - Oakland Community College
   B.S.N. - Spring Arbor University
   M.S.N. - Indiana Wesleyan University

Stevens, Ronald 2008
Senior Business Consultant MI Small Business Development Center

Stokley, Catherine 2008
Security Patrol Officer
   A.A. - Washtenaw Community College
   B.A. - University of Michigan

Strayer, Ross 1989
Faculty: Life Sciences
   B.S. - Eastern Michigan University
   M.S. - Eastern Michigan University

Stuck, Marla E. 2006
Director of Labor and Employee Relations
   A.D. - Stautzenberger College
   A.D. - Stautzenberger College
   B.A. - Cleary College
   M.S. - Eastern Michigan University
   Graduate Certificates - Eastern Michigan University
   S.P.H.R. - Senior Professional Human Resources

Talley, Dana L. 1993
Benefits and Leave Coordinator

Tanguay, Julie 1994
Senior Graphic Designer
   B.A. - College for Creative Studies

Teague, Justin 2011
Faculty: Behavioral Sciences
   B.S. - Western Michigan University
   M.A. - Western Michigan University

Tew, Bonnie E. 1994
Faculty: Humanities
   A.A. - Kellogg Community College
   B.S. - Eastern Michigan University
   M.A. - Eastern Michigan University

Thoburn, Elisabeth 1995
Faculty: Humanities
   B.A. - University of Michigan
   M.A. - University of Michigan

Thomas, Martin 1975
Campus Services Manager

Thompson, Emily 2009
   Faculty: Life Sciences
   B.A. - Swarthmore College
   M.S. - Yale University
   M.Phil. - Yale University
   Ph.D. - Yale University

Tom, Kimberly 1988
Director of User Support Services
   A.D. - Washtenaw Community College
   B.A. - University of Michigan

Townsend, Henry 1991
Faculty: Public Service Careers
   B.A. - University of Michigan, Flint
   M.A. - Eastern Michigan University

Trame, John 1989
Faculty: Electricity/Electronics
   B.S. - University of Houston
   M.S. - University of Houston
   Sp.A. - Eastern Michigan University
   Certificates - Narco Avionics, CCNA, MCP+I, MSCE, Network+
   License - CC General Radio Telephone Operator

Tran, Michael D. 1998
Information Technology Support Specialist
   B.B.A - Eastern Michigan University

Trapp, Lori J. 1996
Director of Financial Aid
   B.A. - Michigan State University
   M.A. - Eastern Michigan University
   Graduate Certificate - Eastern Michigan University

Travis, Susan 2000
Counselor: Health Programs
   B.A. - Concordia College
   M.A. - Eastern Michigan University
   L.P.C. - State of Michigan

Troiano, Christopher   **2009**
Instructional Lab Assistant: Culinary Arts and Hospitality Management
- A.A.S - Washtenaw Community College
- A.A. - Washtenaw Community College
- Certificate - Washtenaw Community College

Truhn, Bonnie   **2010**
Adult Transitions Manager
- B.A. - Hillsdale College
- M.A. - Eastern Michigan University

Tuccinardi, Sandro   **2007**
Advisor: Academic Career Information Technology

Tucker, Brandon   **2011**
Executive Director of Economic & Community Development
- B.A. - University of Toledo
- M.O.L. - Lourdes College

Tuttle, Katherine   **2011**
Purchasing Agent
- B.S. - Madonna University

VanMarter, Kristy   **1994**
Lead Program Specialist Learning Support Services
- B.B.A. - Cleary University

VanWagnen, Randy   **2007**
Faculty: Digital Media Arts
- A.S. - Full Sail Real World Education
- B.A. - Michigan State University

VanSchoick, Timothy   **2007**
Faculty: Auto Body

Veasey, Lisa K.   **1999**
Faculty: English/Writing
- B.A. - Eastern Michigan University
- M.L.S. - Eastern Michigan University

Velarde, Gloria A.   **1990**
Faculty: Nursing
- B.S.N. - Eastern Michigan University
- M.S.N. - Wayne State University

Wahab, Hanan A.   **2000**
Faculty: Mathematics
- M.S. - Michigan State University
- M.S. - Michigan State University

Walsh, Ruth Anne   **1987**
Faculty: Public Service Careers
- B.A. - University of Toledo
- J.D. - University of Toledo

Warsinske, Thomas G.   **1998**
Lead Database Administrator
- B.S. - University of Michigan
- B.S. - Eastern Michigan University

Waskin, David   **2003**
Faculty: English/Writing
- B.A. - University of Michigan
- M.A. - University of Miami

Wasserman, Donna   **2002**
Faculty: Social Sciences
- B.A. - Hamilton College
- M.A. - Georgetown University
- Ph.D. - University of Michigan

Weber, Kathleen   **2002**
Faculty: Dental
- B.A.S. - Siena Heights University
- C.D.A. - Dental Assisting National Board
- R.D.A. - Michigan Board of Dentistry

Werthmann, Donald   **2000**
Faculty: Digital Media Arts
- B.F.A. - Wayne State University
- M.A. - Wayne State University

Westcott, Richard   **1984**
Superintendent of Ground Engineering and Fleet Maintenance

Wildfong, Dave   **2006**
Professional Services Personnel: Employment Services
- B.A. - University of Michigan
- B.A. - University of Michigan
- M.P.A. - Eastern Michigan University

Wilkins, Barry L.   **1982**
Recycle Operations Manager
- A.D. - Washtenaw Community College

Wilkinson, Michael   **2007**
Web Multimedia Developer II
- Certificate - Washtenaw Community College
- Certificate - Specs Howard School of Broadcasting

Williams, Aaron   **2006**
Information Technology Support Specialist

Williams, James   **2009**
Instructional Lab Assistant: Motorcycle
- Certificate- American Motorcycle Instruction
- Certificate - State of Michigan

Williams, Linda   **1987**
Financial Systems and Accounts Payable Manager
- A.D. - Washtenaw Community College
- B.B.A. - Eastern Michigan University
- M.S. - Eastern Michigan University

Williamson, Anthony   **2002**
Community Development Manager
- A.A. - Washtenaw Community College
- B.S. - Eastern Michigan University
- M.S.W. - Eastern Michigan University

Willimann, Kristine   **1999**
Faculty: Digital Media Arts

    B.A. - Michigan State University

Willis, Daniel   **2010**
Auto Services Specialist

Wilson, Elaine   **2003**
Faculty: Humanities

    B.A. - Washington University

    M.A. - Yale University

Withrow, Jason   **2001**
Faculty: Digital Media Arts

    B.A. - Capital University

    M.A. - University of Akron

    M.S.I. - University of Michigan

Witte, Robin   **2012**
Editorial Manager

Wooten, David   **2006**
Faculty: Life Sciences

    A.D. - Macomb Community College

    B.S. - Central Michigan University

    M.S. - Central Michigan University

Worrell, Sandra M.   **1998**
Student Services Advisor: Employment Services

    B.S. - New York State University

    M.Ed. - Northeastern University

Wurster, Allen J.   **1995**
Testing Center Technician

    A.D. - Washtenaw Community College

Young, Colette   **1987**
Faculty: Business

    B.A. - Michigan State University

    M.A. - Michigan State University

    S.P.H.R. Certificate - Senior Professional Human Resources

Young, Joseph   **2010**
Instructional Lab Assistant: Welding

    A.D. - Washtenaw Community College

Zacharias, Matthew   **2006**
Faculty: Digital Media Arts

    B.A. - University of Michigan

Zeng, Wendy   **2013**
Web Programmer II

Zettelmaier, Heather   **2011**
Faculty: English/Writing

    B.P. - Miami University

    M.A. - Eastern Michigan University

    Certificate - Eastern Michigan University

Zielinski, Michael   **2007**
Construction Project Supervisor

Zimmerman, Thomas   **2002**
Faculty: English/Writing

    B.A. - University of Iowa

    M.A. - University of Iowa