



Washtenaw
Community College

2020-2021 Bulletin

Programs and Courses

for 2020-2021

Welcome to the Washtenaw Community College Bulletin

The Catalog of Programs and Courses

For your convenience, the catalog is organized as follows:

1. Institutional and specialized accreditation
2. A list of new program for 2020-2021
3. A list of discontinued programs
4. Programs listed by pathway. Within the pathway, program are listed in the following order:
 - a. Certificates of Completion
 - b. Certificates
 - c. Advanced Certificates
 - d. Associate in Applied Science
 - e. Associate in Arts
 - f. Associate in Science
 - g. Post-Associate Certificate Programs
5. A list of the Subject Codes sorted by description of the code and by the subject code.
6. New courses for 2020-2021
7. Discontinued courses for 2020-2021
8. Course changes for 2020-2021
9. Courses sorted by the title of the subject.

When reviewing the catalog on the web, you are encouraged to use the Bookmarks, which have been set up to take you directly to the identified place.

Institutional Accreditations

Washtenaw Community College

accredited by

The Higher Learning Commission
230 South LaSalle Street, Suite 7-500
Chicago, IL 60604-1411
800-621-7440
www.ncahlc.org

For information on Washtenaw Community College, contact WCC at 734-973-3300.

Specialized Accreditations

Automotive Service Technology AAS Degree

Automotive Services Technician Certificate

Auto Body Repair Certificate

Collision Repair and Refinish Technician Advanced Certificate

All 4 programs accredited by

National Institute for Automotive Service Excellence
ASE Education Foundation
1503 Edwards Ferry Rd., NE
Suite 401
Leesburg, VA 20176
703-669-6650
703-669-6677
info@ASEeducationFoundation.org

Baking and Pastry Arts Management AAS Degree

Culinary and Hospitality Management AAS Degree

both programs accredited by

American Culinary Federation
180 Center Place Way
St. Augustine, FL 32095
800-624-9458
www.acfchefs.org

Specialized Accreditation Continued

Child Development AAS Degree

accredited by

NAEYC Commission on the Accreditation of Early Childhood Higher Education Programs

National Association for the Education of Young Children

1313 L Street NW, Suite 500

Washington, D.C. 20005

202-232-8777

800-424-2460

naeyc.org/accreditation

Children's Center

accredited by

NAEYC Academy for Early Childhood Programs

1313 L Street NW, Suite 500

Washington, D.C. 20005

202-232-8777

800-424-2460

www.naeyc.org/accreditation

Dental Assisting Certificate

accredited by

The Commission on Dental Accreditation of The American Dental Association

211 E. Chicago Avenue, Suite 1900

Chicago, Illinois 60611-2678

312-440-2500

www.ada.org

Specialized Accreditation Continued

Economic and College Development Division



Washtenaw Community College's Economic and College Development Division is accredited by the International Association for Continuing Education and Training (IACET). WCC complies with the ANSI/IACET Standard, which is recognized internationally as a standard of excellence in instructional practices. As a result of the accreditation, WCC is authorized to issue the IACET CEU.

International Association of Continuing Education and Training (IACET)

12100 Sunset Hills Road

Suite 130

Reston, VA 20190

Phone: 703-234-4065

Fax: 703-435-4390

Info@IACET.org

www.iacet.org

Heating, Ventilation, Air Conditioning and Refrigeration (HVACR) AAS Degree

HVACR – Residential Certificate

HVACR – Commercial Trade Advanced Certificate

All 3 programs accredited by

HVAC Excellence

1701 Pennsylvania Ave NW

Washington, DC 20006

Phone: 847-342-9810

Toll Free: 800-394-5268

Fax: 800-546-3726

www.hvacexcellence.org

Specialized Accreditation Continued

Law Enforcement Basic Police Academy

approved by

The Michigan Commission on Law Enforcement Standards
106 W. Allegan Suite 600
P.O. Box 30633
Lansing, Michigan 48909
517-322-1417
www.michigan.gov/mcoles

Registered Nursing AAS Degree

accredited by

ACEN (Accreditation Commission for Education in Nursing)
3343 Peachtree Road NE, Suite 850
Atlanta, GA 30326
Phone: 404-975-5000
Fax: 404-975-5020
www.acenursing.org

approved by

State of Michigan
Department of Community Health
Bureau of Health Professionals
Board of Nursing
611 W Ottawa
P.O. 30670
Lansing, MI 48909-8170
517-335-0918
www.mi.gov/mdch

Pharmacy Technology Certificate

accredited by

The American Society of Health-System Pharmacists
7272 Wisconsin Avenue
Bethesda, MD 20814
301-657-3000
www.ashp.org

Specialized Accreditation Continued

Physical Therapist Assistant AAS Degree

accredited by

Commission on Accreditation in Physical Therapy Education
American Physical Therapy Association
1111 North Fairfax St
Alexandria, VA 22314-9902
703-706-3245
www.capteonline.org

Radiography AAS Degree

accredited by

Joint Review Committee on Education in Radiologic Technology
20 North Wacker Drive, Suite 2850
Chicago, IL 60606-3182
312-704-5300
www.jrcert.org

Surgical Technology AAS Degree

accredited by

The Commission on Accreditation of Allied Health Education Programs (CAAHEP)
25400 US Highway 19 North, Suite 158
Clearwater, FL 33763
727-210-2350
www.caahep.org

Specialized Accreditation Continued

Welding Testing Facility



**ACCREDITED TEST FACILITY
WELDER TESTING**

accredited by

American Welding Society (AWS)

8669 NW 36 Street, #130

Miami, FL 33166

305-443-9353

www.aws.org

For information on obtaining or reviewing documents regarding accreditation, approval, or licensing, contact the [Office of Institutional Effectiveness, Planning, and Accreditation](#).

New Programs Report

Year: 2020-21

Division: Adv Tech/Public Serv Careers (3)

Advanced Automotive Services Technician	CVASV2	Advanced Certificate
Construction Supervision/Rowan University Construction Management BA	TR13S1CNSV	Associate Degree/3+1 Transfer
Transportation Technologies	APOETT	Associate in Applied Science Degree

Division: Business/Computer Technologies (1)

Automotive Cybersecurity	CTACYB	Certificate
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Total Number of New Programs: 4

Discontinued Programs Report

Year: 2020-21

Division: Adv Tech/Public Serv Careers (5)		
Automotive Service Technology	APASRV	Associate in Applied Science Degree
Collision Repair and Refinish Technician	CVCRR	Advanced Certificate
Facility and Energy Management	CTFEM	Certificate
Mechatronics/Wayne State Mechanical Engineering Technology BS	TR11M1METR	Associate Degree/3+1 Transfer
Sustainable Building Practices	CTSBP	Certificate

Division: Business/Computer Technologies (2)		
Computer Systems & Networking /EMU Info Assurance & Cyber Defense BS	TR01C7CSN	Associate Degree/3+1 Transfer
Photographic Technology/College for Creative Studies Photography BFA	TR06P1PHOT	Associate Degree/3+1 Transfer

Division: Math-Science-Engineering Tech (1)		
Environmental Science/Siena Heights Environmental Science BS	TR08E1ENVS	Associate Degree/3+1 Transfer

Total Number of Discontinued Programs: 8

Program Information Report

Broadcast, Communication, Visual, Digital & Fine Arts

3D Animation (CTANI)**Certificate****Program Effective Term: Fall 2020****High Demand Occupation High Skill Occupation High Wage Occupation**

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		(23 credits)
ANI 145	Concept Development for Animation	2
ANI 150	3D Modeling & Production Pipeline	4
ANI 155	Textures and Studio Lighting for Animation	4
ANI 160	Fundamentals of Movement and Animation	4
ANI 230	Motion and Sound	2
ART 111	Basic Drawing I	4
GDT 108	Photoshop Graphics	3

Minimum Credits Required for the Program: 23

Program Information Report

Audio Production and Engineering (CTMPEA) Certificate

Program Effective Term: Fall 2020

High Demand Occupation High Skill Occupation High Wage Occupation

This program is designed for students who wish to develop skills in audio production and engineering that can be applied to multiple industries from music to the digital media arts. Students will assess their personal skills and interests against emerging trends in the industry and be given instruction and the opportunity to receive nationally recognized Avid Pro Tools certification. In addition, students will enhance their engineering skills in multiple recording and live sound settings from solo or group recording to live event reinforcement. Students will also advance their understanding of keyboard theory, music composition for software and develop a professional portfolio and resume by collaborating and networking with clients and professionals in their industry.

Effective FALL 2019: MUS 170, MUS 175, MUS 245, MUS 248, MUS 275 and MUS 286 were changed to AUD 170, AUD 175, AUD 245, AUD 248, AUD 275 & AUD 286, respectively.

Major/Area Requirements		(19 credits)
AUD 170	Introduction to Audio Technology	3
AUD 175	Digital Audio Workstations	3
AUD 245	Composition and Arranging for Keyboard	2
AUD 248	Introduction to Live Sound	3
AUD 275	Advanced Audio Recording Technology	3
AUD 286	Music/Audio Project and Portfolio Production	3
	Restricted Elective (select one): MUS 140, MUS 142, MUS 147, MUS 154, MUS 155 or MUS 285	2

Minimum Credits Required for the Program:

19

Program Information Report

Broadcast Media Arts (CTBCAC) Certificate

Program Effective Term: Fall 2020

High Wage Occupation

The Broadcast Media Arts certificate gives students training in the realm of radio, including live production, editing, vocal delivery and scriptwriting. These skills set the groundwork for a career in radio and highlight training for other fields including voice-over work, broadcast journalism, public relations, marketing and promotions, advertising and media production. This certificate prepares students who are career-track minded and looking to go directly into the field, along with those who are planning to complete further studies.

Major/Area Requirements		(12 credits)
COM 150	Introduction to Radio Production	3
COM 155	Scriptwriting for Broadcast Arts	3
COM 160	Voice and Articulation	3
COM 170	Advanced Radio Production	3

Minimum Credits Required for the Program: 12

Program Information Report

**Client-side Web Developer (CTWBCD)
Certificate**

Program Effective Term: Fall 2020

High Demand Occupation High Skill Occupation High Wage Occupation

Program is also available online

This program is designed for students interested in employment as Client-side Web Developers. Students will create standards-compliant, accessible and usable Web interfaces that meet both user and client needs.

Articulation:

Eastern Michigan University, several BS degrees.

Program Admission Requirements:

College-level reading and writing

Major/Area Requirements		(11 credits)
WEB 110	Web Development I	4
WEB 210	Web Development II	4
Elective	Any WEB, CIS or CPS course	3-4

Minimum Credits Required for the Program: 11

Program Information Report

Digital Strategist (CTWDGS) Certificate

Program Effective Term: Fall 2020

High Demand Occupation High Skill Occupation High Wage Occupation

This program is for students interested in the strategic management aspects of web design and development. Courses focus on the knowledge and skills necessary for employment as a digital strategist, marketing specialist or project manager.

Articulation:

Eastern Michigan University, several BS degrees.

Program Admission Requirements:

College-level reading and writing

Major/Area Requirements		(11 credits)
BMG 155	Business on the Internet	3
WEB 133	Digital Strategy	4
WEB 163	User Research and Project Management	4

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

Program Information Report

Digital Video Production (CTDVPC) Certificate

Program Effective Term: Fall 2020

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.

Students should choose the appropriate faculty for academic advising based on their last name: Dan Kier (A-M), Matt Zacharias (N-Z).

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/curriculum/articulation/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		(20 credits)
VID 105	Foundations in Digital Video I	4
VID 125	Foundations in Digital Video II	4
VID 203	Commercial Video Production	3
VID 255	Green Screen I	3
VID 270	Documentary Video Production I	3
VID 276	Video Graphics I	3

Minimum Credits Required for the Program: 20

Program Information Report

English as a Second Language (CTESL1) Certificate

Program Effective Term: Fall 2020

This certificate is for international students who would like to prepare for college degree study in the United States. Students experience rigorous English study in grammar, writing, listening/speaking, and reading in order to give them the best possible chances of success in future degree studies.

Program Admission Requirements:

This certificate is open only to international students who speak English as their second language. Students must place into Low-Intermediate to Advanced ESL courses at WCC using the English Placement Test (EPT).

Major/Area Requirements		(24 credits)
ESL 132	Intermediate ESL Grammar*	4
ESL 161	Advanced ESL Grammar*	4
ESL 128	Low Intermediate ESL Reading and Writing*	4
ESL 134	Intermediate ESL Reading*	4
Students with higher reading levels may substitute ACS 107 and/or ACS 108 for ESL 128 and/or ESL 134		
ESL 138 or	Intermediate ESL Writing*	4
Students with higher writing levels may substitute ESL 168		
ESL 135 or	English Listening, Pronunciation and Conversation (ESL)*	4
Students with higher listening/speaking skills may substitute ESL 165; elective to reach 24 total credits may be required		

Minimum Credits Required for the Program:

24

Notes:

**Students will be placed at appropriate entry-level course based on EPT or regular Accuplacer scores.*

Program Information Report

Fine and Performing Arts (CTFPA) Certificate

Program Effective Term: Fall 2020

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.*

Program Information Report

Graphic Design (CFGDTC) Certificate

Program Effective Term: Fall 2020

High Demand Occupation High Skill Occupation High Wage Occupation

This program provides students with entry-level skills in graphic design and allows students to upgrade or expand their present skills. It also is a path for upgrading or expanding skills in one's present employment. 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.

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/curriculum/articulation/levelone/colleges/>.

Program Admission Requirements:

Good computer skills and aptitude are required to enroll in GDT computer-based courses. GDT courses are taught using Macintosh computers.

Major/Area Requirements		(27 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
WEB 115	Interface Design I	4
WEB 215	Interface Design II	4
	Restricted Electives: ART 101, ART 102, ART 111, ART 112, ART 114, ART 120, ART 122, ART 125, ART 127, ART 129, GDT 106, GDT 108, GDT 239, or any 100 level or higher ANI, PHO, VID or WEB course.	3

Minimum Credits Required for the Program:

27

Program Information Report

Interface Designer (CTWBID) Certificate

Program Effective Term: Fall 2020

High Demand Occupation High Skill Occupation High Wage Occupation

This program is designed for students interested in gaining the skills necessary to design industry standard digital interfaces. Students will learn Web design skills such as appropriate use of Web fonts, colors on the Web, Web layout and digital marketing collateral.

Articulation:

Eastern Michigan University, several BS degrees.

Program Admission Requirements:

College-level reading and writing

Major/Area Requirements		(11 credits)
WEB 115	Interface Design I	4
WEB 215	Interface Design II	4
Elective	Any WEB, CIS or CPS course	3-4

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

Program Information Report

Photographic Imaging (CTPHOI) Certificate

Program Effective Term: Fall 2020

This program prepares students to enter the ever-evolving field of photography by providing a strong foundation of technical and aesthetic skills. Areas of study include: basic camera operation and composition skills; film and digital exposure and processing methods; studio lighting; and printing and presentation techniques.

Major/Area Requirements		(23 credits)
PHO 111	Photography I	4
PHO 117	Introduction to the Studio	4
PHO 122	Film and Darkroom Photography	3
PHO 127	Digital Photo Imaging I	4
PHO 129	Black and White Digital Imaging	4
PHO 228	Digital Photo Imaging II	4

Minimum Credits Required for the Program: 23

Program Information Report

**Server-side Web Developer (CTWBSD)
Certificate**

Program Effective Term: Fall 2020

High Demand Occupation High Skill Occupation High Wage Occupation

This program is designed for students interested in employment as Server-side Web Developers. Students will create standards-compliant, accessible and usable Web interfaces that meet both user and client needs.

Articulation:

Eastern Michigan University, several BS degrees.

Program Admission Requirements:

College-level reading and writing

Major/Area Requirements		(11 credits)
CPS 276	Web Programming Using Apache, MySQL, and PHP	4
WEB 230	Advanced JavaScript	4
Elective	Any WEB, CIS or CPS course	3-4

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

Program Information Report

Technical Communication (CTTC) Certificate

Program Effective Term: Fall 2020

High Demand Occupation High Skill Occupation High Wage Occupation

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, online help systems and screencast training modules. Using tools of the technical communication profession, 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.

Major/Area Requirements		(20 credits)
ENG 107	Technical Writing Fundamentals*	3
ENG 208	Technical Writing for Print Delivery	3
ENG 209	Technical Writing for Online Delivery	3
ENG 218	Technical Writing for eLearning	3
ENG 245	Job Search Success Seminar	2
Elective	Select one GDT course from the following: GDT 104, GDT 106, or GDT 108	3
Elective	Select one WEB course from the following: WEB 110, WEB 113 or WEB 115	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.

Program Information Report

**User Experience Designer (CTWUED)
Certificate**

Program Effective Term: Fall 2020

High Demand Occupation High Skill Occupation High Wage Occupation

Program is also available online

This program is designed for students interested in employment as a User Experience professional. Students will create industry-standard information architecture, interaction design, information design and human-computer interaction deliverables.

Articulation:

Eastern Michigan University, several BS degrees.

Program Admission Requirements:

College-level reading and writing

Major/Area Requirements		(11 credits)
WEB 113	Web User Experience I	4
WEB 213	Web User Experience II	4
Elective	Any WEB or GDT course	3-4

Minimum Credits Required for the Program: 11

Program Information Report

Animation for Film and Broadcast (CVANIF)

Advanced Certificate

Program Effective Term: Fall 2020

This program will help prepare students to pursue a career in film, advertising, commercial and other pre-rendered animation fields. Students will learn to model, animate, texture and render in a fashion appropriate for the industries. They will also learn basic compositing and visual effects.

Program Admission Requirements:

Students must have completed the 3D Animation Certificate or have appropriate industry experience.

Major/Area Requirements		(19 credits)
ANI 235	Introduction to Compositing and Visual Effects	4
ANI 250	Organic Modeling and Rigging	4
ANI 260	3D Animation III	4
ART 127	Life Drawing I	4
VID 276	Video Graphics I	3

Minimum Credits Required for the Program:

19

Program Information Report

Animation for Game Art (CVANIG)

Advanced Certificate

Program Effective Term: Fall 2020

This program focuses on the growing electronic game industry. Students will build on their 3D animation skills and learn how to create game levels and custom game assets. Students will create basic artificial intelligence entities and triggers as well as in-game cinematics. Students will learn how to package a game for distribution.

Program Admission Requirements:

Students must have completed the 3D Animation Certificate or have appropriate industry experience.

Major/Area Requirements	(19 credits)
ANI 180 Introduction to Game Level Design	4
ANI 190 History of Game Design	3
ANI 240 Advanced Game Level Design	4
ANI 250 Organic Modeling and Rigging	4
ANI 260 3D Animation III	4

Minimum Credits Required for the Program:

19

Program Information Report

Digital Video Advanced Production (CVDVAP)

Advanced Certificate

Program Effective Term: Fall 2020

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.

Students should choose the appropriate faculty for academic advising based on their last name: Dan Kier (A-M), Matt Zacharias (N-Z).

Program Admission Requirements:

Completion of the Digital Video Production Certificate or comparable industry experience.

Major/Area Requirements		(21 credits)
VID 230	Directing for Video Production	3
VID 210	Screenplays	3
VID 240	Digital Cinematography	3
VID 260	Green Screen II	3
VID 270	Documentary Video Production I	3
VID 275	Documentary Video Production II	3
VID 277	Video Graphics II	3
Minimum Credits Required for the Program:		21

Program Information Report

3D Animation Arts (APANID)**Associate in Applied Science Degree****Program Effective Term: Fall 2020****High Demand Occupation High Skill Occupation High Wage Occupation**

The 3D Animation Arts program prepares students for entry-level positions in digital 3D modeling and animation for use in film, video, broadcast, video game design, visualization, advertising, print, and the web. Students will select a concentration in either Film and Broadcast or Game Art. They will develop ideas in the pre-production concept phase, execute them in the production phase, and polish them in the post-production phase to create finished work. Through this process, students will develop critical industry skills such as storyboarding, modeling, texturing, lighting, rigging, animating, rendering, editing, sound engineering, and compositing. Ultimately, students will apply everything they have learned to create a demo reel that showcases their 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/curriculum/articulation/levelone/colleges/>.

Applying for Admission to the Program:

Good computer skills and aptitude are required to enroll in computer-based courses. Courses are taught using Macintosh computers.

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

Select a concentration for requirements and total credits required for this program.

3D Animation Arts Concentrations**Animation for Film and Broadcast (ANIB) (60 credits)****First Semester (16 credits)**

ANI 145	Concept Development for Animation	2
ANI 150	3D Modeling & Production Pipeline	4
ART 111	Basic Drawing I	4
COM 101	Fundamentals of Speaking	3
	Math Elective(s)	3

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 (7 credits)

ANI 235	Introduction to Compositing and Visual Effects	4
	Arts/Human. Elective(s)	3

Fourth Semester (12 credits)

ANI 230	Motion and Sound	2
ANI 250	Organic Modeling and Rigging	4
ENG 107 or	Technical Writing Fundamentals	
ENG 111	Composition I	3
	Nat. Sci. Elective(s)	3

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 Concentration or Option: 60**Animation for Game Art (ANIC) (60 credits)****First Semester (16 credits)**

ANI 145	Concept Development for Animation	2
ANI 150	3D Modeling & Production Pipeline	4
ART 111	Basic Drawing I	4
COM 101	Fundamentals of Speaking	3

Wednesday, July 29, 2020 5:2:56 p.m.

Program Information Report

Math Elective(s)	3
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Second Semester	(14 credits)
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ANI 155	Textures and Studio Lighting for Animation	4
ANI 160	Fundamentals of Movement and Animation	4
ANI 190	History of Game Design	3
GDT 108	Photoshop Graphics	3

Third Semester	(7 credits)
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ANI 180	Introduction to Game Level Design	4
	Arts/Human. Elective(s)	3

Fourth Semester	(12 credits)
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ANI 230	Motion and Sound	2
ANI 250	Organic Modeling and Rigging	4
ENG 107 or	Technical Writing Fundamentals	
ENG 111	Composition I	3
	Nat. Sci. Elective(s)	3

Fifth Semester	(11 credits)
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ANI 240	Advanced Game Level Design	4
ANI 260	3D Animation III	4
	Soc. Sci. Elective(s)	3

Minimum Credits Required for the Concentration or Option: 60

Minimum Credits Required for the Program: 60

Program Information Report

Graphic Design (APGRD)

Associate in Applied Science Degree

Program Effective Term: Fall 2020

High Demand Occupation High Skill Occupation High Wage Occupation

This program prepares students for a career as a graphic designer. Graphic designers are specialists in the field of visual communication, trained to communicate, inform, instruct or sell. Students gain skills in the principles of graphic design, publication design, interface and mobile design working on a variety of projects that focus on theory, concept development, typography and production techniques that culminates in the production of a portfolio. Creative and artistic ability is required for careers in graphic design, as well as originality and the capacity for experimentation in visual problem-solving. Students also need the ability to master software skills as they relate to each medium.

Articulation:

College for Creative Studies, 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/curriculum/articulation/levelone/colleges/>.

Program Admission Requirements:

Basic proficiency with desktop computers is required to enroll in GDT computer-based courses.

Note: Graphic Design computer-based courses are taught on Macintosh computers.

First Fall Semester (18 credits)

ENG 111	Composition I	4
GDT 101	History of Graphic Design	3
GDT 104	Introduction to Graphic Design	4
WEB 115	Interface Design I	4
	Soc. Sci. Elective(s)	3

First Winter Semester (14 credits)

GDT 100	Typography I	4
GDT 112	Principles and Problem-Solving in Graphic Design	4
	Math Elective(s)	3
	Restricted Electives: ART 101, ART 102, ART 111, ART 112, ART 114, ART 120, ART 122, ART 125, ART 127, ART 129, GDT 106, GDT 108, or any 100 level or higher ANI, PHO, VID or WEB course.	3

Second Fall Semester (16 credits)

GDT 215	Typography II	4
GDT 220	Publication Design	4
GDT 239	Imaging and Illustration	4
WEB 215	Interface Design II	4

Second Winter Semester (17 credits)

GDT 252	Advanced Digital Studio	4
GDT 290	Professional Practices	4
	Nat. Sci. Elective(s)	3
COM 101	Fundamentals of Speaking	3
	Restricted Electives: ART 101, ART 102, ART 111, ART 112, ART 114, ART 120, ART 122, ART 125, ART 127, ART 129, GDT 106, GDT 108, or any 100 level or higher ANI, PHO, VID or WEB course.	3

Minimum Credits Required for the Program:

65

Program Information Report

Occupational Studies (APOST)

Associate in Applied Science Degree

Program Effective Term: **Fall 2020**

High Demand Occupation High Skill Occupation High Wage Occupation

Program is also available online

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. 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.

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

General Studies Program Requirements	(60 credits)
Complete the General Education Requirements for the Associate in Applied Science Degree:	18
Writing/Composition (3)	
Second Writing/Composition or Communication (3)	
Math (3)	
Natural Sciences (3)	
Social and Behavioral Science (3)	
Arts and Humanities (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	22
Minimum Credits Required for the Program:	60

Program Information Report

Photographic Technology (APPHOT)

Associate in Applied Science Degree

Program Effective Term: Fall 2020

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:

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/curriculum/articulation/levelone/colleges/>.

First Semester		(14 credits)
PHO 111	Photography I	4
PHO 122	Film and Darkroom Photography	3
PHO 127	Digital Photo Imaging I	4
Elective	Writing Elective(s)*	3
Second Semester		(14 credits)
PHO 117	Introduction to the Studio	4
PHO 129	Black and White Digital Imaging	4
	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 108, GDT 112, VID 105, VID 125, WEB 110	3
Elective	Math Elective(s)**	3
Third Semester		(16 credits)
PHO 103	History of Photography***	3
PHO 211 or	Large Format Photography I	3
PHO 220	Advanced Studio Techniques****	3
PHO 228	Digital Photo Imaging II	4
	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 108, GDT 112, VID 105, VID 125, WEB 110	3
Elective	Soc. Sci. Elective(s)	3
Fourth Semester		(16 credits)
PHO 230	Portfolio Projects	3
PHO 231	Portfolio Seminar	4
	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 108, GDT 112, VID 105, VID 125, WEB 110	3
Elective	Nat. Sci. Elective(s)	3
Elective	Speech/Comp. Elective(s)*****	3
Minimum Credits Required for the Program:		60

Notes:

*ENG 100 or ENG 111 is recommended

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***MTH 125 is recommended*

****PHO 103 fulfills the Arts and Humanities general education requirement*

****PHO 220 requires that the prerequisite course, PHO 116, be taken prior to or concurrently with PHO 222*

*****COM 101 or COM 102 is recommended*

Program Information Report

Web Design and Development (APWDDD)

Associate in Applied Science Degree

Program Effective Term: Fall 2020

High Demand Occupation High Skill Occupation High Wage Occupation

This degree prepares you for the multi-faceted industry of Web design and development. The content in Web coding, Web programming, Web design, user experience and digital strategy provide a rich variety of classes that prepare you to enter the Web industry with a range of skills and knowledge. By focusing on one or more areas in the degree, you will gain skills that translate to marketable skills and career paths. Completion of one of the following certificates is required to complete this degree.

Client-side Web Developer Certificate

WEB 110 Web Development I
WEB 210 Web Development II
Any WEB, CIS or CPS course

Interface Designer Certificate

WEB 115 Interface Design I
WEB 215 Interface Design II
Any WEB or GDT course

User Experience Designer Certificate

WEB 113 Web User Experience I
WEB 213 Web User Experience II
Any WEB or GDT course

Server-side Web Developer Certificate

CPS 276 Web Programming Using Apache, MySQL, and PHP
WEB 230 Advanced JavaScript
Any WEB, CIS or CPS course

Digital Strategist Certificate

BMG 155 Business on the Internet
WEB 133 Digital Strategy
WEB 163 User Research and Project 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/curriculum/articulation/levelone/colleges/>.

Continuing Eligibility Requirements:

For successful continuation in the program, a minimum grade of "C" is required for all WEB courses.

First Semester		(17 credits)
	Certificate Course 1	4
Elective	Writing Elective(s)	3
Elective	Arts/Human. Elective(s)	3
Elective	Restricted Elective(s) 1 - Choose from any of the following disciplines: ANI, CIS, CPS, ENG 107, ENG 209, GDT, PHO, WEB.	4
Elective	Open Elective(s)	3-4
Second Semester		(14 credits)
	Certificate Course 2	4
Elective	Math Elective(s)	3
Elective	Soc. Sci. Elective(s)	3
Elective	Restricted Elective(s) 2 - Choose from any of the following disciplines: ANI, CIS, CPS, ENG 107, ENG 209, GDT, PHO, WEB.	4
Third Semester		(14 credits)
	Certificate Course 3	3-4
Elective	Nat. Sci. Elective(s)	3

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Elective	Restricted Elective(s) 3 - Choose from any of the following disciplines: ANI, CIS, CPS, ENG 107, ENG 209, GDT, PHO, WEB.	4
Elective	WEB Elective(s): Complete a course that is not in your chosen certificate.	4
Fourth Semester		(15 credits)
COM 101	Fundamentals of Speaking	3
Elective	Restricted Elective(s) 4 - Choose from any of the following disciplines: ANI, CIS, CPS, ENG 107, ENG 209, GDT, PHO, WEB.	4
Elective	WEB Elective(s): Complete a course that is not in your chosen certificate.	4
Elective	Open Elective(s) to reach a minimum of 60 credits.	4
Minimum Credits Required for the Program:		60

Program Information Report

Broadcast Media Arts (AABCM)

Associate in Arts Degree

Program Effective Term: **Fall 2020**

High Wage Occupation

The Broadcast Media Arts program provides hands-on training in the realm of radio and gives students experience in live production, script-writing, announcing and editing. The program course offerings emphasize the communication and technical skills needed for jobs in a variety of fields within the media industry, including advertising, public relations, broadcast journalism, project production and producing. This program prepares students to either enter directly into the workforce or transfer to a four-year institution.

Articulation:

Eastern Michigan University; BA and 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/curriculum/articulation/levelone/colleges/>.

First Semester		(15 credits)
COM 101	Fundamentals of Speaking	3
COM 155	Scriptwriting for Broadcast Arts	3
Elective	Math Elective(s)	3
Elective	Soc. Sci. Elective(s) 1	3
Elective	Restricted Elective(s): COM 142, COM 183, COM 210, COM 235, COM 240, DRA 152, FLM 120, GDT 104, JRN 111, PHO 111 or VID 105	3-4

Second Semester		(16 credits)
COM 160	Voice and Articulation	3
ENG 111	Composition I	4
Elective	Nat. Sci. Elective(s)	3
Elective	Restricted Elective(s): Select two courses from COM 142, COM 183, COM 210, COM 235, COM 240, DRA 152, FLM 120, GDT 104, JRN 111, PHO 111 or VID 105	6-7

Third Semester		(15 credits)
COM 130	Introduction to Mass Communication	3
COM 150	Introduction to Radio Production	3
ENG 107	Technical Writing Fundamentals	3
Elective	Nat. Sci. Lab Elective(s)	3
Elective	Restricted Elective(s): COM 142, COM 183, COM 210, COM 235, COM 240, DRA 152, FLM 120, GDT 104, JRN 111, PHO 111 or VID 105	3-4

Fourth Semester		(15 credits)
COM 170	Advanced Radio Production	3
Elective	Soc. Sci. Elective(s) 2	3
Elective	Arts/Human. Elective(s) 2 (not COM)	3
Elective	Restricted Elective(s): Select two courses from COM 142, COM 183, COM 210, COM 235, COM 240, DRA 152, FLM 120, GDT 104, JRN 111, PHO 111 or VID 105	6-7

Minimum Credits Required for the Program: 61

Program Information Report

Digital Video Production (AADVP)

Associate in Arts Degree

Program Effective Term: Fall 2020

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.

Students should choose the appropriate faculty for academic advising based on their last name: Dan Kier (A-M), Matt Zacharias (N-Z).

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/curriculum/articulation/levelone/colleges/>.

First Semester		(14 credits)
ENG 111	Composition I	4
	Nat. Sci. Elective(s)	3
FLM 120 or	Introduction to Film	
FLM 150 or	International Cinema	
FLM 185	The Horror Film	3
VID 105	Foundations in Digital Video I	4
Second Semester		(16 credits)
FLM 160	American Film	3
VID 125	Foundations in Digital Video II	4
VID 270	Documentary Video Production I	3
	Arts/Human. Elective(s) 2 (Not FLM)	3
	Math Elective(s)	3
Third Semester		(15 credits)
	Speech/Comp. Elective(s)	3
	Soc. Sci. Elective(s) 1	3
VID 210 or	Screenplays	
VID 240	Digital Cinematography	3
VID 276	Video Graphics I	3
Elective	Select a course from the VID discipline	3
Fourth Semester		(15 credits)
VID 255 or	Green Screen I	
VID 275	Documentary Video Production II	3
	Nat. Sci. Lab Elective(s)	3
	Soc. Sci. Elective(s) 2	3
VID 203	Commercial Video Production	3
VID 295	Portfolio and Project Seminar	3
Minimum Credits Required for the Program:		60

Program Information Report

Film Studies (AAFS)

Associate in Arts Degree

Program Effective Term: **Fall 2020**

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		(16 credits)
COM 130	Introduction to Mass Communication	3
FLM 120	Introduction to Film	3
Elective	Math Elective(s)	3
Elective	Nat. Sci. Elective(s)	3
ENG 111	Composition I	4
Second Semester		(17 credits)
COM 101	Fundamentals of Speaking	3
ENG 226	Composition II	3
FLM 160	American Film	3
VID 105	Foundations in Digital Video I	4
	Elective(s) to reach a minimum 60 credits	4
Third Semester		(12 credits)
COM 150	Introduction to Radio Production	3
FLM 150	International Cinema	3
Elective	Nat. Sci. Lab Elective(s)	3
Elective	Soc. Sci. Elective(s) 1	3
Fourth Semester		(15 credits)
FLM 185	The Horror Film	3
FLM 220	Great Directors	3
Elective	Soc. Sci. Elective(s) 2	3
Elective	Elective(s) to reach a minimum of 60 credits	6
Minimum Credits Required for the Program:		60

Program Information Report

Fine Arts (AAFAA)

Associate in Arts Degree

Program Effective Term: **Fall 2020**

This Associate of Art in Fine Arts Degree is a transfer degree designed to be the first two years of a Bachelors of Fine Art (BFA) degree and/or a Bachelors of Art Education (BAE) degree. Students will develop fine art drawing skills, learn 2D and 3D design elements and principles, and color expression skills that are necessary to be successful in completing a BFA or BAE degree. This degree also prepares students who are seeking careers/positions as a fine artists; those artists who are seeking work with community art education programs; gallery managers; professional studio internships; art studio teaching assistants; and those who wish to work as apprentices in community theater set designs.

First Semester		(14 credits)
ART 111	Basic Drawing I	4
ENG 111	Composition I	4
MTH 125 or	Everyday College Math	
	Any Math Level 4 or Higher Course	3
	Nat. Sci. Elective(s)	3
Second Semester		(13 credits)
ART 112	Basic Design I	4
COM 101	Fundamentals of Speaking	3
HUM 101 or	Introduction to the Humanities - Ancient to Medieval	
HUM 102 or	Introduction to the Humanities - Renaissance to Modern	
HUM 103	Introduction to the Humanities - 20th Century to Present	3
	Nat. Sci. Lab Elective(s)	3
Third Semester		(15 credits)
ART 102	Color	4
ART 114	Painting I	4
	Soc. Sci. Elective(s) 1	3
	Restricted Fine Art Elective: Choose ART 120, ART 121, ART 125, ART 127, ART 128, ART 129, or ART 136	4
Fourth Semester		(18 credits)
ART 108	Three-Dimensional Design	4
ART 122	Basic Drawing II	4
	Arts/Human. Elective(s) 2 (Not HUM)	3
	Soc. Sci. Elective(s) 2	3
	Elective(s) to reach minimum 60 credits; students must complete 100-level or above transferrable course(s)	2
	General Education Elective(s) (0-2 credits) to reach a minimum 30 General Education Credits	2
Minimum Credits Required for the Program:		60

Program Information Report

Global Studies (AAGS)**Associate in Arts Degree****Program Effective Term: Fall 2020**

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		(15 credits)
ART 150	Monuments and Cultures	3
ENG 111	Composition I	4
	Foreign Language*	5
	Math Elective(s)	3
Second Semester		(14 credits)
ENG 226	Composition II	3
GEO 101	World Regional Geography	3
	Foreign Language*	5
	Nat. Sci. Elective(s)	3
Third Semester		(16 credits)
	Arts/Human. Elective(s) 1	3
COM 225	Intercultural Communication	3
	Nat. Sci. Lab Elective(s)	3
	Global Studies Elective(s)**	4
	Soc. Sci. Elective(s) 1	3
Fourth Semester		(15 credits)
ANT 201	Introduction to Cultural Anthropology	3
	Arts/Human. Elective(s) 2	3
	Global Studies Elective(s)**	3
	Global Studies Elective(s)**	3
	Soc. Sci. Elective(s) 2	3

Minimum Credits Required for the Program: 60

Notes:

*First Year Language I and II meet the requirements, excludes conversational courses.

**Go to http://webfiles.wccnet.edu/Foreign%20Language/Global_Studies_Course_Options.pdf

Program Information Report

Journalism (AAJOUR)**Associate in Arts Degree****Program Effective Term: Fall 2020****High Skill Occupation High Wage Occupation**

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.

Articulation:

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/curriculum/articulation/levelone/colleges/>.

First Semester (16 credits)

COM 130	Introduction to Mass Communication	3
ENG 111	Composition I	4
JRN 111	Introduction to Journalism	3
Elective	Math Elective(s)	3
Elective	Nat. Sci. Elective(s)	3

Second Semester (13 credits)

COM 101 or	Fundamentals of Speaking	
ENG 226	Composition II	3
JRN 210	Introduction to Copy Editing*	3
Elective	Nat. Sci. Lab Elective(s)	3
	Elective(s) Any 100-level or above course to to reach a minimum 60 credits	4

Third Semester (15 credits)

JRN 217	Introduction to Feature Writing*	3
Elective	Arts/Human. Elective(s) 1	3
	Elective(s) Any 100-level or above course to to reach a minimum 60 credits	3
Elective	Soc. Sci. Elective(s) 1	3
	Restricted Elective(s) 1 ENG 107 or Any 100-level or above course from COM, GDT, PHO, PLS, VID or WEB	3

Fourth Semester (16 credits)

JRN 220	Introduction to Digital Journalism*	3
Elective	Arts/Human. Elective(s) 2	3
Elective	Soc. Sci. Elective(s) 2	3
	Restricted Elective(s) 2 ENG 107 or Any 100-level or above course from COM, GDT, PHO, PLS, VID or WEB	3
	Elective(s) Any 100-level or above course to to reach a minimum 60 credits	4

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

*JRN 217 is offered in Fall only; JRN 210 and JRN 220 are offered in Winter only.

Program Information Report

Liberal Arts Transfer (AALAT)

Associate in Arts Degree

Program Effective Term: **Fall 2020**

Program is also available online

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, CHN, COM, DAN, DRA, ECO, ENG, FRN, GEO, GRM, HST, HUM, JRN, MUS, PHL, PLS, PSY, SOC, SPN and YOG.

Communication Concentration (COM)

COM 102 Interpersonal Communication

COM 160 Voice and Articulation

COM 183 Persuasion

COM 210 Nonverbal Communication

COM 225 Intercultural Communication

Articulation:

Eastern Michigan University, BA and BS degrees;

Central Michigan University, BS degrees;

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/curriculum/articulation/levelone/colleges/>.

Minimum Concentration Credits Required for the Program:

60

Liberal Arts Transfer Concentrations

Major Concentrations (1-5) (60 credits)

First Semester (13 credits)

ENG 111	Composition I	4
Elective	Math Elective(s)	3
	Major Concentration 1	3
	Major Concentration 2	3

Second Semester (15 credits)

	Arts/Human. Elective(s)	3-5
Elective	Elective(s) 100-level or above transferrable courses	3
Elective	Elective(s) 100-level or above transferrable courses	3
	Major Concentration 3	3
Elective	Nat. Sci. Elective(s)	3

Third Semester (15 credits)

	Speech/Comp. Elective(s)	3
Elective	Arts/Human. Elective(s) 2 (not COM)	3
Elective	Elective(s) 100-level or above transferrable courses	3
	Major Concentration 4	3
Elective	Soc. Sci. Elective(s) 1	3

Fourth Semester (17 credits)

	Nat. Sci. Lab Elective(s)	3
Elective	Elective(s) 100-level or above transferrable courses to reach a minimum of 60 credits	6
	Major Concentration 5	3
Elective	Soc. Sci. Elective(s) 2	3
Elective	General Education Elective(s) (0-2 credits) to reach a minimum 30 General Education credits	2

Minimum Credits Required for the Concentration or Option: **60**

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Communication Concentration (COM) (60 credits)**First Semester (12 credits)**

COM 101	Fundamentals of Speaking*	3
COM 210	Nonverbal Communication	3
Elective	Arts/Human. Elective(s) 2 (not COM)	3
Elective	Math Elective(s)	3

Second Semester (16 credits)

COM 102	Interpersonal Communication	3
COM 160	Voice and Articulation	3
ENG 111	Composition I	4
Elective	Elective(s) 100-level or above transferrable courses	3
Elective	Elective(s) 100-level or above transferrable courses	3

Third Semester (15 credits)

COM 183	Persuasion	3
ENG 226	Composition II	3
Elective	Nat. Sci. Elective(s)	3
Elective	Soc. Sci. Elective(s) 1	3
Elective	Elective(s) 100-level or above transferrable courses	3

Fourth Semester (17 credits)

COM 225	Intercultural Communication	3
Elective	Nat. Sci. Lab Elective(s)	3
Elective	Soc. Sci. Elective(s) 2	3
Elective	Elective(s) 100-level or above transferrable courses to reach a minimum of 60 credits	6
Elective	General Education Elective(s) (0-2 credits) to reach a minimum 30 General Education credits	2

Minimum Credits Required for the Concentration or Option: 60**Minimum Credits Required for the Program: 60****Notes:**

*Satisfies one of the Arts and Humanities requirements.

A course counted for general education or program requirements may not also be counted for a Major Concentration. See an advisor for assistance in choosing courses.

Program Information Report

Technical Communication (AATCD)

Associate in Arts Degree

Program Effective Term: Fall 2020

High Demand Occupation High Skill Occupation High Wage Occupation

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 tools of the technical communication profession, students prepare content for print and online delivery, develop screencast training modules, learn how to conduct a formal job search and create professional portfolios to showcase their skills.

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 MTA 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/curriculum/articulation/levelone/colleges/>.

Program Admission Requirements:

Basic computer literacy.

First Semester		(13 credits)
COM 101	Fundamentals of Speaking	3
ENG 107	Technical Writing Fundamentals	3
ENG 111	Composition I	4
Elective	Math Elective(s)	3
Second Semester		(15 credits)
ENG 208	Technical Writing for Print Delivery	3
ENG 226	Composition II	3
Elective	GDT Elective Select one course from the following: GDT 104, GDT 106 or GDT 108	3
Elective	Soc. Sci. Elective(s) 1*	3
Elective	Soc. Sci. Elective(s) 2*	3
Third Semester		(15 credits)
ENG 209	Technical Writing for Online Delivery	3
Elective	Arts/Human. Elective(s) 1*	3
Elective	Nat. Sci. Elective(s)*	3
Elective	Restricted Elective(s)**	3
Elective	WEB Elective Select one course from the following: WEB 110, WEB 113 or WEB 115	3
Fourth Semester		(17 credits)
ENG 218	Technical Writing for eLearning	3
ENG 245	Job Search Success Seminar	2
Elective	Arts/Human. Elective(s) 2*	3
Elective	Nat. Sci. Lab Elective(s)*	3
Elective	Elective(s) to reach minimum 60 credits	3
Elective	Restricted Elective(s)**	3

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.

**JRN 210 is strongly recommended. Students must meet with the Technical Communication program advisor to select additional elective courses.

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Program Information Report

General Studies (AGGSD)**Associate in General Studies**Program Effective Term: **Fall 2020****Program is also available online**

This degree is designed for students who wish to earn an associate degree by creating a personalized program. It offers two pathways for completion: a pathway to four-year transfer or a pathway to employment in their chosen career. Students will design this 60 credit, multi-disciplinary program in conjunction with an academic advisor and can include coursework from all areas of the college; occupational and academic.

Minimum Option Credits Required for the Program:**60****General Studies Options****Employment Pathway (60 credits)****First Semester (15 credits)**

Elective	Writing Elective(s)	3-4
Elective	Math Elective(s)	3
	Concentration 1	3
	Concentration 2	3
Elective	Elective(s)	3

Second Semester (15 credits)

Elective	Speech/Comp. Elective(s)	3
Elective	Arts/Human. Elective(s)	3
	Concentration 3	3
Elective	Elective(s)	3
Elective	Elective(s)	3

Third Semester (15 credits)

Elective	Nat. Sci. Elective(s)	3-4
	Concentration 4	3
	Concentration 5	3
Elective	Elective(s)	3
Elective	Elective(s)	3

Fourth Semester (15 credits)

Elective	Soc. Sci. Elective(s)	3
	Concentration 6	3
Elective	Elective(s)	3
Elective	Elective(s)	3
Elective	Electives to reach a minimum of 60 credits	3

Minimum Credits Required for the Concentration or Option: 60**Transfer Pathway (60 credits)****First Semester (15 credits)**

Elective	Writing Elective(s)	3-4
Elective	Math Elective(s)	3
	Concentration 1	3
	Concentration 2	3
Elective	Elective(s)	3

Second Semester (15 credits)

Elective	Speech/Comp. Elective(s)	3
Elective	Nat. Sci. Elective(s)	3
Elective	Arts/Human. Elective(s)	3
	Concentration 3	3
Elective	Elective(s)	3

Third Semester (15 credits)

Elective	Nat. Sci. Lab Elective(s)	3-4
Elective	Soc. Sci. Elective(s) 1	3

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	Concentration 4	3
	Concentration 5	3
Elective	Elective(s)	3
Fourth Semester		(15 credits)
Elective	Soc. Sci. Elective(s) 2	3
Elective	Arts/Human. Elective(s) 2	3
	Concentration 6	3
Elective	General Education electives to reach a minimum of 30 credit hours as needed	3
Elective	Electives to reach a minimum of 60 credits (0-3 credits)	3

Minimum Credits Required for the Concentration or Option: 60

Minimum Credits Required for the Program: 60

Program Information Report

Business & Culinary Arts

Accounting for Business (CTACCB)**Certificate****Program Effective Term: Fall 2020****High Demand Occupation High Skill Occupation****Program is also available online**

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	3
ACC 111	Principles of Accounting I*	3
ACC 110	Payroll Accounting	2
ACC 131	QuickBooks Software	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

Administrative Assistant I (CTADA)

Certificate

Program Effective Term: Fall 2020

High Demand Occupation High Skill Occupation High Wage Occupation

[Program is also available online](#)

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**

Program Information Report

Applied Data Science (CTADS) Certificate

Program Effective Term: Fall 2020

The Applied Data Science certificate is intended for students who want to pursue a career in data analytics ("big data") or enhance their current business skills. Students learn how to capture, manipulate, and analyze structured data-the massive volume of numeric values that can be easily stored and sorted. They learn how to transform data into information to enable faster and more intelligent decision-making.

Continuing Eligibility Requirements:

Minimum grade of "C" in major/area courses.

Major/Area Requirements		(17 credits)
BMG 265	Business Statistics	3
BMG 275	Business and Supply Chain Analytics	4
BMG 285 or	Applied Data Analytics	4
CIS 285	Applied Data Analytics	4
CIS 110	Introduction to Computer Information Systems	3
CIS 282	Database Principles and Application	3

Minimum Credits Required for the Program: 17

Program Information Report

Baking and Pastry Essentials (CTBPAE) Certificate

Program Effective Term: Fall 2020

In this introductory program, students will learn the science of baking, basic baking and pastry techniques, and food service sanitation. Emphasis is placed on safe food handling, storage and proper utilization of ingredients and equipment.

Program Admission Requirements:

Academic Math Level 2 or concurrent enrollment in MTH 067 or higher math course is required for enrollment in CUL 104.

Major/Area Requirements		(10 credits)
CUL 104	Baking Science*	2
CUL 110	Sanitation and Hygiene	2
CUL 114	Fundamentals of Baking	3
CUL 115	Fundamentals of Pastry	3

Minimum Credits Required for the Program:

10

Notes:

*CUL 104 requires Academic Math Level 2 or concurrent enrollment in MTH 067 (or higher MTH course).

Program Information Report

Baking and Pastry Skills and Operations (CTBPAS) Certificate

Program Effective Term: Fall 2020

High Skill Occupation

This program prepares students for entry-level careers in commercial baking, where they may work in bakeries, country clubs, resorts, hotels, or institutional food service operations. Courses can be applied toward the Associate in Applied Science Degree in baking and pastry.

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/curriculum/articulation/levelone/colleges/>.

Major/Area Requirements		(24 credits)
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	Culinary Principles	3
CUL 132	Cakes and Wedding Cake Design	2
CUL 206	Plated Desserts	3
CUL 211	Artisan Breads	4
CUL 215	Cake Decorating Techniques	2

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

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 206, CUL 211, CUL 215.

Program Information Report

Business Enterprise Basics (CTBUSB)

Certificate

Program Effective Term: Fall 2020

High Demand Occupation High Skill Occupation High Wage Occupation

Program is also available online

In this program, students will build develop a foundational understanding of business operations basics. It will provide a framework for students to develop a plan for future study in the business field.

Major/Area Requirements		(15 credits)
ACC 100 or	Accounting Practices for Business	3
ACC 111	Principles of Accounting I*	3
BMG 140	Introduction to Business	3
BMG 207	Business Communication	3
BMG 230	Principles of Management	3
BMG 250	Principles of Marketing	3

Minimum Credits Required for the Program: 15

Notes:

*A math level of 4 is required for ACC 111.

Program Information Report

Computer Software Applications (CTCSSC) Certificate

Program Effective Term: Fall 2020

Program is also available online

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/curriculum/articulation/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

Program Information Report

Core Business Skills (CTBCS) Certificate

Program Effective Term: Fall 2020

Program is also available online

The purpose of this program is to provide a series of courses so students gain a basic understanding of business and the core foundation of business principles. The goal is to provide students the opportunity to combine this certificate with a number of other business certificates as they progress toward an associate's degree. The courses in this program are required in WCC's Business Associate in Arts Degree and the Accounting Associate in Applied Science programs. This certificate also supports WCC's Management, Retail and Supply Chain associate degree programs offered by the School of Business and Entrepreneurial Studies and supports any of the occupational programs where students will be working in a business setting.

Program Admission Requirements:

An Academic Math Level is required for CIS 110, ACC 111 and BMG 265.

Major/Area Requirements		(21 credits)
ACC 111	Principles of Accounting I	3
ACC 122	Principles of Accounting II	3
BMG 111	Business Law I	3
BMG 140	Introduction to Business	3
BMG 207	Business Communication	3
BMG 265	Business Statistics	3
CIS 110	Introduction to Computer Information Systems	3

Minimum Credits Required for the Program:

21

Program Information Report

Culinary Essentials (CTCULE) Certificate

Program Effective Term: Fall 2020

In this program, students explore the essentials of culinary skills and techniques. Topics relating to food safety, basic knife skills, and conventional cooking methods required in professional food service operations will be discussed. Students with a passion for food, or who are currently employed in entry to mid-level culinary positions, will gain deeper insight in culinary arts to progress in many food service related careers. The program provides a foundation for continued study toward an associate degree.

Program Admission Requirements:

Academic Math Level 2 or concurrent enrollment in MTH 067 or higher math course is required for enrollment in CUL 116.

Major/Area Requirements		(11 credits)
CUL 110	Sanitation and Hygiene	2
CUL 116	Culinary Principles*	3
CUL 120	Classical Kitchen	3
CUL 121	Modern Kitchen	3

Minimum Credits Required for the Program:

11

Notes:

*CUL 116 requires Academic Math Level 2 or concurrent enrollment in MTH 067 (or higher MTH course).

Program Information Report

Culinary Skills and Operations (CTCULM) Certificate

Program Effective Term: Fall 2020

High Demand Occupation High Skill Occupation

In this program, students will prepare for a position as food production specialist in a hotel, restaurant, or other institutional setting where they will prepare dishes from a variety of menu categories and perform professional skills such as food receiving, storage, and sanitation. Students will explore elemental aspects of food service management and acquire a wide range of industry skills. This certificate also gives students a foundation for continued study in an associate degree in culinary arts.

Major/Area Requirements		(31 credits)
CUL 104	Baking Science	2
CUL 110	Sanitation and Hygiene*	2
CUL 114	Fundamentals of Baking	3
CUL 116	Culinary Principles	3
CUL 118	Culinary Nutrition	3
CUL 120	Classical Kitchen	3
CUL 121	Modern Kitchen	3
CUL 141	Principles of Cost Control	3
CUL 145	Dining Room Service	3
CUL 150	Management and Supervision	3
CUL 221	Culinary Purchasing	3

Minimum Credits Required for the Program: **31**

Notes:

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

Program Information Report

Digital Business Marketing and Sales (CTBSMS) Certificate

Program Effective Term: Fall 2020

High Demand Occupation High Skill Occupation High Wage Occupation

This certificate is designed to provide students with the opportunity for employment in digital marketing and sales that require basic digital business applications. Specific skills include customer interface, basic market research, business trends, presentation content, presentation tools and business market analysis. This program allows students to obtain this certificate as a specialized credential as they progress towards an advanced business certificate, Associate Degree or a transfer pathway to a four-year university.

Program Admission Requirements:

Competency in keyboarding and internet navigation skills are 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.*

Program Information Report

Entrepreneurship and Innovation (CTENTI) Certificate

Program Effective Term: Fall 2020

High Demand Occupation High Skill Occupation High Wage Occupation

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 entrepreneur 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 business or occupational certificate program.	9

Minimum Credits Required for the Program: 18

Program Information Report

Human Resource Management (HRM) (CTHRMG) Certificate

Program Effective Term: Fall 2020

High Demand Occupation High Wage Occupation

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 or	Payroll Accounting	
ACC 111	Principles of Accounting I	2-3
BMG 150	Labor-Management Relations	3
BMG 207	Business Communication	3
BMG 240	Human Resources Management	3
BMG 279	Organizational Management	3
BMG 205 or	Creating the Customer Experience	
BMG 230 or	Principles of Management	
CIS 110	Introduction to Computer Information Systems	3
Minimum Credits Required for the Program:		17

Program Information Report

Management (CTMNGC) Certificate

Program Effective Term: Fall 2020

High Demand Occupation High Skill Occupation High Wage Occupation

Program is also available online

This certificate offers students 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 certificate may also be applied toward various Associate in Applied Science degrees.

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/curriculum/articulation/levelone/colleges/>.

Major/Area Requirements		(12 credits)
BMG 230	Principles of Management	3
BMG 273	Managing Operations	3
BMG 279	Organizational Management	3
BMG 231 or	Nonprofit Management	
BMG 291	Project Management	3
Minimum Credits Required for the Program:		12

Program Information Report

Retail and Business Operations (CTRBUS)

Certificate

Program Effective Term: Fall 2020

High Demand Occupation High Skill Occupation High Wage Occupation

Program is also available online

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 228	Purchasing and Inventory Control	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 2020

High Demand Occupation High Skill Occupation High Wage Occupation

[Program is also available online](#)

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. As part of the program, students will be ready to take the tests needed to receive their CLA (Certified Logistics Associate) and CLT (Certified Logistics Technician) industry certifications.

Major/Area Requirements		(16 credits)
BMG 181	Introduction to Supply Chain Management	3
BMG 182	Warehousing and Logistics	3
BMG 226	Transportation and Logistics	3
BMG 228	Purchasing and Inventory Control	3
BMG 275	Business and Supply Chain Analytics	4

Minimum Credits Required for the Program: 16

Program Information Report

Administrative Assistant II (CVAAST)

Advanced Certificate

Program Effective Term: Fall 2020

High Demand Occupation High Skill Occupation High Wage Occupation

[Program is also available online](#)

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

Program Information Report

Business Enterprise Essentials (CVBUSE)

Advanced Certificate

Program Effective Term: Fall 2020

High Demand Occupation High Skill Occupation High Wage Occupation

In this program, students will build the essential skills for daily business operations, spanning the major fields of practice. Students will select courses from business management, marketing, finance and communication to build a personal career path.

Suggested Career Paths

Management

BMG 111 Business Law I
 BMG 181 Introduction to Supply Chain Management
 BMG 228 Purchasing and Inventory Control
 BMG 240 Human Resources Management
 BMG 273 Management Operations
 BMG 293 Business Enterprise Essentials Capstone

Finance

ACC 110 Payroll Accounting
 ACC 131 QuickBooks
 BMG 111 Business Law I
 BMG 228 Purchasing and Inventory Control
 BMG 293 Business Enterprise Essentials Capstone
 BOS 184 Spreadsheet Software Applications I

Marketing and Communications

BMG 160 Principles of Sales
 BMG 200 Relationship Skills in the Workplace
 BMG 205 Creating the Customer Experience
 BMG 206 Retail Principles and Practices
 BMG 240 Human Resources Management
 BMG 293 Business Enterprise Essentials Capstone

Major/Area Requirements		(16 credits)
Elective	Restricted Elective(s): Select 15 credits from ACC 110, ACC 131, BMG 111, BMG 160, BMG 181, BMG 200, BMG 205, BMG 206, BMG 228, BMG 240, BMG 273, BOS 184	15
BMG 293	Business Enterprise Essentials Capstone	1

Minimum Credits Required for the Program: 16

Program Information Report

Accounting (APACCT)

Associate in Applied Science Degree

Program Effective Term: Fall 2020

High Demand Occupation High Skill Occupation

Program is also available online

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 degrees;
Eastern Michigan University, BBA or BS degree;
Walsh College, BBA or BS degree
Wayne State 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/curriculum/articulation/levelone/colleges/>.

Program Admission Requirements:

Students must have:

- Academic Math Level of 3 to enroll in MTH 125 and MTH 160
- Academic Math Level of 4 to enroll in MTH 176

First Semester		(16 credits)
ACC 111	Principles of Accounting I	3
BMG 140	Introduction to Business	3
BOS 184	Spreadsheet Software Applications I	3
CIS 110	Introduction to Computer Information Systems	3
MTH 125 or	Everyday College Math	
MTH 160 or	Basic Statistics	
MTH 176	College Algebra	4
Second Semester		(17 credits)
ACC 110	Payroll Accounting	2
ACC 122	Principles of Accounting II	3
ACC 131	QuickBooks Software	3
BMG 111	Business Law I	3
COM 101	Fundamentals of Speaking	3
TAX 101	Income Taxes for Individuals	3
Third Semester		(15 credits)
ACC 213	Intermediate Accounting I	3
BMG 265	Business Statistics	3
ECO 211	Principles of Economics I	3
	Arts/Human. Elective(s)*	3
	Nat. Sci. Elective(s)	3
Fourth Semester		(16 credits)
ACC 214	Intermediate Accounting II	3
ACC 225	Managerial Cost Accounting	3
BMG 207	Business Communication	3
ECO 222	Principles of Economics II	3
ENG 111	Composition I	4
Minimum Credits Required for the Program:		64

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.

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Program Information Report

Baking and Pastry Arts and Management (APBPAM)**Associate in Applied Science Degree****Program Effective Term: Fall 2020**

This program 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 dining establishments, catering, baking/pastry shops, chocolatiers or entrepreneurial and cottage industries.

Articulation:

Cleary University, BBA degree;
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/curriculum/articulation/levelone/colleges/>.

First Semester (16 credits)

CUL 104	Baking Science	2
CUL 110	Sanitation and Hygiene	2
CUL 141	Principles of Cost Control	3
CUL 150	Management and Supervision	3
Elective	Math Elective(s)	3
Elective	Writing Elective(s)	3

Second Semester (14 credits)

CUL 116	Culinary Principles	3
CUL 118	Culinary Nutrition	3
CUL 132	Cakes and Wedding Cake Design	2
CUL 221	Culinary Purchasing	3
Elective	Arts/Human. Elective(s)	3

Third Semester (17 credits)

CUL 114	Fundamentals of Baking	3
CUL 115	Fundamentals of Pastry	3
CUL 201	Chocolate Confections	3
CUL 215	Cake Decorating Techniques	2
Elective	Nat. Sci. Elective(s)	3
Elective	Speech/Comp. Elective(s)	3

Fourth Semester (16 credits)

BMG 101	Entrepreneurship I: Finding Your Opportunity	3
CUL 205	Sugar and Chocolate Showpieces	3
CUL 206	Plated Desserts	3
CUL 211	Artisan Breads	4
Elective	Soc. Sci. Elective(s)	3

Minimum Credits Required for the Program: 63

Program Information Report

Business Enterprise (APBUSD)

Associate in Applied Science Degree

Program Effective Term: **Fall 2020**

High Demand Occupation High Skill Occupation High Wage Occupation

In this program, students will develop a practical background in daily business operations, spanning the major fields of practice. Students will gain the knowledge and skills necessary to enter or advance in Business. Students can focus on one or more of the areas such as business management, marketing or finance.

First Semester		(15 credits)
ACC 100 or	Accounting Practices for Business	
ACC 111	Principles of Accounting I	3
BMG 140	Introduction to Business	3
BMG 207	Business Communication	3
BMG 230	Principles of Management	3
BMG 250	Principles of Marketing	3
Second Semester		(15 credits)
	Restricted Elective(s): Select 15 credits from ACC 110, ACC 131, BMG 111, BMG 160, BMG 181, BMG 200, BMG 205, BMG 206, BMG 228, BMG 240, BMG 273, BOS 184	15
Third Semester		(15 credits)
BMG 293	Business Enterprise Essentials Capstone	1
Elective	Writing Elective(s)	3-4
Elective	Math Elective(s)	3-4
Elective	Nat. Sci. Elective(s)	3-4
Elective	Open Electives	5
Fourth Semester		(15 credits)
Elective	Speech/Comp. Elective(s)	3-4
Elective	Soc. Sci. Elective(s)	3
Elective	Arts/Human. Elective(s)	3
Elective	Open Electives	6
Minimum Credits Required for the Program:		60

Program Information Report

Business Office Administration (APBOAD)

Associate in Applied Science Degree

Program Effective Term: Fall 2020

High Demand Occupation High Skill Occupation High Wage Occupation

Program is also available online

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 (applies to the Law Office Administration and Medical Administrative Assistant concentrations).

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

Minimum Concentration Credits Required for the Program:

60

Complete one of the following concentrations: Administrative Assistant, Medical Administrative Assistant, Law 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) (61 credits)

First Semester (13 credits)

BOS 101C	Advanced Keyboarding	1
BOS 106	Electronic Planning, Sharing and Organization	3
BOS 206	Personal Management Application and Internet Resources	2
ENG 111	Composition I	4
	Math Elective(s)	3

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 182 or	Database Software Applications	
BOS 284	Spreadsheet Software Applications II	3
	Speech/Comp. Elective(s)	3

Fourth Semester (9 credits)

BMG 207	Business Communication	3
BOS 208	Desktop Publishing for the Office	3
	Nat. Sci. Elective(s)	3

Fifth Semester (13 credits)

ACC 131	QuickBooks Software	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: 61

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Program Information Report

Law Office Administration (LAWA) (62 credits)**First Semester (13 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)	3
ENG 111	Composition I	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 (11 credits)

CJT 130	Introduction to Paralegal Studies	3
BOS 207	Presentation Software Applications	2
	Elective(s) Select one: BOS 182, BOS 257 or BOS 284	3
	Speech/Comp. Elective(s)	3

Fourth Semester (12 credits)

BMG 111	Business Law I	3
BMG 155	Business on the Internet	3
	Select a second course: BOS 182, BOS 257 or BOS 284	3
	Nat. Sci. Elective(s)	3

Fifth Semester (14 credits)

BMG 207	Business Communication	3
BOS 250	Office Administration	4
CJT 156	Everyday Law	4
	Soc. Sci. Elective(s)	3

Minimum Credits Required for the Concentration or Option: 62**Medical Administrative Assistant (MEDA) (60 credits)****First Semester (13 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)	3
ENG 111	Composition I	4

Second Semester (13 credits)

BOS 157	Word Processing and Document Formatting I	3
BOS 184	Spreadsheet Software Applications I	3
HSC 124	Medical Terminology	3
BIO 109 or	Essentials of Human Anatomy and Physiology	
BIO 111	Anatomy and Physiology - Normal Structure and Function	4

Third Semester (11 credits)

BOS 207	Presentation Software Applications	2
BOS 257	Word Processing and Document Formatting II	3
MBC 223	Medical Office Procedures	3
	Speech/Comp. Elective(s)	3

Fourth Semester (13 credits)

	Arts/Human. Elective(s)	3
BMG 155	Business on the Internet	3
BMG 207	Business Communication	3
MBC 224	Medical Insurance and Reimbursement	4

Fifth Semester (10 credits)

BOS 182 or	Database Software Applications	
BOS 284	Spreadsheet Software Applications II	3

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Program Information Report

HSC 131	CPR/AED and First Aid	1
PHL 244	Ethical and Legal Issues in Health Care	3
	Soc. Sci. Elective(s)	3

Minimum Credits Required for the Concentration or Option: 60

Office Management (OFMG) (63 credits)

First Semester (13 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)	3
ENG 111	Composition I	4

Second Semester (12 credits)

ACC 100	Accounting Practices for Business	3
BOS 157	Word Processing and Document Formatting I	3
BOS 184	Spreadsheet Software Applications I	3
	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/Comp. Elective(s)	3

Fourth Semester (12 credits)

BMG 207	Business Communication	3
BMG 230	Principles of Management	3
BOS 182	Database Software Applications	3
	Nat. Sci. Elective(s)	3

Fifth Semester (13 credits)

BMG 240	Human Resources Management	3
BMG 279	Organizational Management	3
BOS 250	Office Administration	4
	Soc. Sci. Elective(s)	3

Minimum Credits Required for the Concentration or Option: 63

Minimum Credits Required for the Program: 60

Program Information Report

Culinary Arts and Management (APCULA)**Associate in Applied Science Degree****Program Effective Term: Fall 2020**

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:

Cleary University, BBA degree;
Eastern Michigan University, several BS degrees;
Madonna 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/curriculum/articulation/levelone/colleges/>

First Semester		(17 credits)
CUL 110	Sanitation and Hygiene	2
CUL 116	Culinary Principles	3
CUL 118	Culinary Nutrition	3
CUL 145	Dining Room Service	3
	Math Elective(s)	3
	Writing Elective(s)	3
Second Semester		(17 credits)
CUL 104	Baking Science	2
CUL 120	Classical Kitchen	3
CUL 141	Principles of Cost Control	3
CUL 150	Management and Supervision	3
	Speech/Comp. Elective(s)	3
	Nat. Sci. Elective(s)	3
Third Semester		(17 credits)
CUL 114	Fundamentals of Baking	3
CUL 121	Modern Kitchen	3
CUL 208	Menu Planning	3
CUL 221	Culinary Purchasing	3
	CUL Restricted Elective(s) 1: Choose one from CUL 232, CUL 233, CUL 234, CUL 251	2
	Arts/Human. Elective(s)	3
Fourth Semester		(16 credits)
CUL 115	Fundamentals of Pastry	3
CUL 210	Garde Manger	3
CUL 230	American Regional and Global Cuisines	3
CUL 245	Beverage Management	2
	CUL Restricted Elective(s) 2: Choose a second course from CUL 232, CUL 233, CUL 234, CUL 251	2
	Soc. Sci. Elective(s)	3
Minimum Credits Required for the Program:		67

Notes:

*CUL 110 must be taken prior to or concurrently with the following lab classes: CUL 114, CUL 115, CUL 120, CUL 121

Program Information Report

Management (APMNGD)

Associate in Applied Science Degree

Program Effective Term: **Fall 2020**

High Demand Occupation High Skill Occupation High Wage Occupation

Program is also available online

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:

Eastern Michigan University, BBA 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/curriculum/articulation/levelone/colleges/>.

First Semester		(15 credits)
BMG 230	Principles of Management	3
	Math Elective(s)	3
	Writing Elective(s)	3
	Occupational/Technical Course 1*	3
	Restricted Elective: Choose from ACC, BMG, CIS, BOS, WEB	3
Second Semester		(15 credits)
BMG 273	Managing Operations	3
	Nat. Sci. Elective(s)	3
	Speech/Comp. Elective(s) 2	3
	Occupational/Technical Course 2*	3
	Restricted Elective: Choose from ACC, BMG, CIS, BOS, WEB	3
Third Semester		(15 credits)
BMG 279	Organizational Management	3
	Arts/Human. Elective(s)	3
	Occupational/Technical Course 3*	3
	Occupational/Technical Course 4*	3
	Restricted Elective: Choose from ACC, BMG, CIS, BOS, WEB	3
Fourth Semester		(15 credits)
BMG 291	Project Management	3
	Soc. Sci. Elective(s)	3
	Occupational/Technical Course 5	3
	Restricted Elective: Choose from ACC, BMG, CIS, BOS, WEB	3
	Elective(s) to reach minimum 60 credits	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.

Program Information Report

Occupational Studies (APOST)

Associate in Applied Science Degree

Program Effective Term: **Fall 2020**

High Demand Occupation High Skill Occupation High Wage Occupation

Program is also available online

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. 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.

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

General Studies Program Requirements	(60 credits)
Complete the General Education Requirements for the Associate in Applied Science Degree:	18
Writing/Composition (3)	
Second Writing/Composition or Communication (3)	
Math (3)	
Natural Sciences (3)	
Social and Behavioral Science (3)	
Arts and Humanities (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	22
Minimum Credits Required for the Program:	60

Program Information Report

Retail Management (APRM)

Associate in Applied Science Degree

Program Effective Term: Fall 2020

High Demand Occupation High Skill Occupation High Wage Occupation

Program is also available online

This program emphasizes both the theoretical knowledge and the practical skills needed to succeed in both customer-facing and behind-the-scenes jobs in any type of retail setting. The curriculum was developed with input from industry experts and topics include the role of retailing in the supply chain, retailing formats and locations, organizational structure and key positions, growth and expansion, consumer communication, and brands and private labels. Student also learn about productivity, operational and financial measures, purchasing and inventory control, pricing schemes, and merchandise layout and presentation.

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.

Articulation:

Eastern Michigan University, BBA 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/curriculum/articulation/levelone/colleges/>.

First Semester (16 credits)

BMG 205	Creating the Customer Experience	3
BMG 206	Retail Principles and Practices	3
ENG 111	Composition I	4
Elective	Soc. Sci. Elective(s) 1	3
	Restricted Elective(s) 1: Choose a course toward completion of selected certificate.	3

Second Semester (15 credits)

BMG 228	Purchasing and Inventory Control	3
Elective	Nat. Sci. Elective(s)	3
MTH 125 or	Everyday College Math	
MTH 160 or	Basic Statistics	
Elective	Math Elective(s) Any math level 4 or higher course	3
COM 101 or	Fundamentals of Speaking	
COM 102	Interpersonal Communication	3
	Restricted Elective(s) 2: Choose a course toward completion of selected certificate.	3

Third Semester (16 credits)

BMG 273	Managing Operations	3
BMG 275	Business and Supply Chain Analytics	4
Elective	Soc. Sci. Elective(s) 2	3
Elective	Arts/Human. Elective(s) 1	3
	Restricted Elective(s) 3: Choose a course toward completion of selected certificate.	3

Fourth Semester (13 credits)

BMG 230	Principles of Management	3
BMG 295	Supply Chain Field Studies	2
Elective	Nat. Sci. Lab Elective(s)	3
Elective	Arts/Human. Elective(s) 2	3
	Restricted Elective(s) 4 0-7 credits: Choose course(s) toward completion of selected certificate as needed.	
Elective	MTA Elective(s) (0-2 credits) to reach minimum 30 MTA credits	2

Minimum Credits Required for the Program: 60

Program Information Report

Supply Chain Management (APSCM)

Associate in Applied Science Degree

Program Effective Term: Fall 2020

High Demand Occupation High Skill Occupation High Wage Occupation

Program is also available online

This program emphasizes both the theoretical knowledge and practical skills needed to succeed in both customer-facing and behind-the-scenes jobs in any type of logistics setting as products move from point-of-origin to point-of consumption. The curriculum was developed with input from industry experts and topics include the supply chain ecosystem, warehousing, operations, transportation, purchasing, reverse logistics, retail, inventory management, and analytics. Students also learn about supplier relationship management and leadership/management skills. As part of the program, students will be ready to take the tests needed to receive their CLA (Certified Logistics Associate) and CLT (Certified Logistics Technician) industry certification.

Articulation:

Eastern Michigan University, BBA degree;

Wayne State 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/curriculum/articulation/levelone/colleges/>.

First Semester		(15 credits)
BMG 181	Introduction to Supply Chain Management	3
BMG 182	Warehousing and Logistics	3
BMG 205	Creating the Customer Experience	3
Elective	Soc. Sci. Elective(s) 1	3
Elective	Arts/Human. Elective(s) 1	3
Second Semester		(15 credits)
BMG 206	Retail Principles and Practices	3
BMG 226	Transportation and Logistics	3
Elective	Nat. Sci. Elective(s)	3
MTH 125 or	Everyday College Math	
MTH 160 or	Basic Statistics	
Elective	Math Elective(s) Any math level 4 or higher course	3
COM 101 or	Fundamentals of Speaking	
COM 102	Interpersonal Communication	3
Third Semester		(15 credits)
BMG 228	Purchasing and Inventory Control	3
BMG 273	Managing Operations	3
BMG 275	Business and Supply Chain Analytics	4
Elective	Nat. Sci. Lab Elective(s)	3
Elective	MTA Elective(s) (0-2 credits) to reach minimum 30 MTA credits	2
Fourth Semester		(15 credits)
BMG 230	Principles of Management	3
BMG 295	Supply Chain Field Studies	2
Elective	Soc. Sci. Elective(s) 2	3
ENG 111	Composition I	4
Elective	Arts/Human. Elective(s) 2	3
Minimum Credits Required for the Program:		60

Program Information Report

Business Administration - Transfer (AABATR)

Associate in Arts Degree

Program Effective Term: Fall 2020

High Demand Occupation High Skill Occupation High Wage Occupation

Program is also available online

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 an area of business. Check with an advisor for information on transferring to a specific college.

Articulation:

Eastern Michigan University, BBA degree*;
 Ferris State University, BS degree;
 Northwood University, BBA degree;
 Oakland University, BS degree;
 University of Michigan-Flint, BA degree;
 Walsh College, BA or BBA degree
 Wayne State University, BS degree.

This program can meet the Michigan Transfer Agreement (MTA). Students must have their transcripts certified for MTA 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: www.wccnet.edu/curriculum/articulation/levelone/colleges/.

Program Admission Requirements:

Students must have:

- Academic Math Level of 3 to enroll in MTH 125 and MTH 160
- Academic Math Level of 4 to enroll in MTH 176

First Semester		(14 credits)
BMG 140	Introduction to Business	3
ENG 111	Composition I	4
MTH 125 or	Everyday College Math	
MTH 160 or	Basic Statistics	
MTH 176	College Algebra	4
Elective	Nat. Sci. Elective(s)	3
Second Semester		(15 credits)
ACC 111	Principles of Accounting I	3
BMG 207	Business Communication	3
CIS 110	Introduction to Computer Information Systems	3
Elective	Speech/Comp. Elective(s)	3
Elective	Arts/Human. Elective(s)	3
Third Semester		(15 credits)
ACC 122	Principles of Accounting II	3
BMG 111	Business Law I	3
BMG 265	Business Statistics	3
ECO 211	Principles of Economics I	3
Elective	Soc. Sci. Elective(s) 2	3
Fourth Semester		(16 credits)
ECO 222	Principles of Economics II	3
Elective	Nat. Sci. Lab Elective(s)	3
Elective	Arts/Human. Elective(s) 2	3
Elective	Electives to reach a minimum of 60 credits. It is recommended students complete one or more of the following: BMG 181, BMG 230, BMG 250. **	7

Minimum Credits Required for the Program:

60

Notes:

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**See the MTA list to make course selections from any discipline except ECO.*

***Check the requirements of the program and college to which you are transferring.*

Program Information Report

Construction Management (AACMG)

Associate in Arts Degree

Program Effective Term: Fall 2020

High Demand Occupation High Skill Occupation High Wage Occupation

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 MTA. Students must have their transcripts certified for MTA 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/curriculum/articulation/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		(11 credits)
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
MTH 178	General Trigonometry	3
	Arts/Human. Elective(s) 1	3
	Speech/Comp. Elective(s)	3
Third Semester		(12 credits)
BMG 240	Human Resources Management	3
CMG 180	Application of Construction Materials	3
ECO 211	Principles of Economics I	3
	Nat. Sci. Elective(s) 1	3
Fourth Semester		(16 credits)
BMG 207	Business Communication	3
CMG 170	Construction Graphics	3
GLG 114	Physical Geology	4
	Arts/Human. Elective(s) 2	3
	Soc. Sci. Elective(s) 2	3
Fifth Semester		(6 credits)
BMG 111	Business Law I	3
CMG 200	Construction Systems	3

Minimum Credits Required for the Program: 60

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.

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

Program Information Report

General Studies (AGGSD)**Associate in General Studies**Program Effective Term: **Fall 2020****Program is also available online**

This degree is designed for students who wish to earn an associate degree by creating a personalized program. It offers two pathways for completion: a pathway to four-year transfer or a pathway to employment in their chosen career. Students will design this 60 credit, multi-disciplinary program in conjunction with an academic advisor and can include coursework from all areas of the college; occupational and academic.

Minimum Option Credits Required for the Program:**60****General Studies Options****Employment Pathway (60 credits)****First Semester (15 credits)**

Elective	Writing Elective(s)	3-4
Elective	Math Elective(s)	3
	Concentration 1	3
	Concentration 2	3
Elective	Elective(s)	3

Second Semester (15 credits)

Elective	Speech/Comp. Elective(s)	3
Elective	Arts/Human. Elective(s)	3
	Concentration 3	3
Elective	Elective(s)	3
Elective	Elective(s)	3

Third Semester (15 credits)

Elective	Nat. Sci. Elective(s)	3-4
	Concentration 4	3
	Concentration 5	3
Elective	Elective(s)	3
Elective	Elective(s)	3

Fourth Semester (15 credits)

Elective	Soc. Sci. Elective(s)	3
	Concentration 6	3
Elective	Elective(s)	3
Elective	Elective(s)	3
Elective	Electives to reach a minimum of 60 credits	3

Minimum Credits Required for the Concentration or Option: 60**Transfer Pathway (60 credits)****First Semester (15 credits)**

Elective	Writing Elective(s)	3-4
Elective	Math Elective(s)	3
	Concentration 1	3
	Concentration 2	3
Elective	Elective(s)	3

Second Semester (15 credits)

Elective	Speech/Comp. Elective(s)	3
Elective	Nat. Sci. Elective(s)	3
Elective	Arts/Human. Elective(s)	3
	Concentration 3	3
Elective	Elective(s)	3

Third Semester (15 credits)

Elective	Nat. Sci. Lab Elective(s)	3-4
Elective	Soc. Sci. Elective(s) 1	3

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	Concentration 4	3
	Concentration 5	3
Elective	Elective(s)	3
Fourth Semester		(15 credits)
Elective	Soc. Sci. Elective(s) 2	3
Elective	Arts/Human. Elective(s) 2	3
	Concentration 6	3
Elective	General Education electives to reach a minimum of 30 credit hours as needed	3
Elective	Electives to reach a minimum of 60 credits (0-3 credits)	3

Minimum Credits Required for the Concentration or Option: 60

Minimum Credits Required for the Program: 60

Program Information Report

Health Sciences

Nursing Assistant Skills Training (CCNAST)**Certificate of Completion****Program Effective Term: Fall 2020**

This state certified four-five week program prepares students to work as a nursing assistant in a variety of health care settings such as nursing homes, hospitals and home care. Training takes place in the classroom, lab and clinical settings within the community. Upon completion of the program, students are eligible to apply for and take the Michigan Certified Nurse Aid (CNA) exam.

Program Admission Requirements:

Program admission requires a minimum age of 17 and Academic Reading and Writing Level 3. Students need to bring a paper photocopy of their driver's license or Michigan State ID to the mandatory orientation for the criminal background clearance check.

Major/Area Requirements**(4 credits)**

HSC 100	Basic Nursing Assistant Skills	4
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Minimum Credits Required for the Program:**4**

Program Information Report

Dental Assisting (CFDAC) Certificate

Program Effective Term: Fall 2020

High Demand Occupation

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://health.wccnet.edu/dentalassisting/certification/>.

Applying for Admission to the Program:

A formal application and acceptance to the program is required. Application packets may be downloaded from WCC's Student Connection, Health and Second Tier Program, information page <http://www.wccnet.edu/studentconnection/admissions/health-second-program/>. Completed and signed applications must be submitted during the dates indicated on the application to the Health and Second Tier Admissions Office in the Student Connection, located on the second floor of the Student Center Building. Applications for both pathways are processed on a first-qualified, first admitted basis.

Program Admission Requirements:

Washtenaw Community College uses a limited enrollment process for admission to this program. There are multiple requirements that must be completed prior to submitting an application for admission. For detailed information regarding admission to this health care program, please visit our Health Care website at <http://health.wccnet.edu/>. Prerequisite and program requirements along with WCC's point system and scales are reviewed annually and subject to change.

Students are expected to meet the prerequisite and program requirements of the catalog term for the semester in which they first begin the program. Details regarding WCC's admissions process and to download the application can be found on WCC's Student Connection, Health and Second Tier Program, information page: <http://www.wccnet.edu/studentconnection/admissions/health-second-program/>.

Admission Requirements for Pathway I (On Campus):

Each year approximately 24 students are accepted to Pathway I for a Fall start on a first-qualified, first-admitted basis.

1. Admission to WCC.
2. Participation in a mandatory information session. Contact Jodi Neuman at jneuman@wccnet.edu
3. Program prerequisite courses:
 - a. ACS 1035 (Introduction to Online Learning)
 - b. HSC 101 or HSC 124 with a minimum grade of C+/2.3
4. Academic Reading Level of 6 (College Level)
5. Academic Writing Level of 6 (College Level)
6. Verification of high school diploma, GED or higher degree.
7. 18 years of age by October 1st of the year student starts the program.
8. Signed Student Competencies Form (see application packet). WCC reserves the right to request, before or during the program, that students successfully demonstrate specific physical and cognitive abilities related to the program.
9. Residency verification.

Admission Requirements for Pathway II (ADAEP):

Each year, approximately 36 students are accepted to Pathway II for a Fall, Winter and Spring/Summer semester start (12 per semester) on a first-qualified, first-admitted basis.

1. Admission to WCC.
2. Contact Tina Sprague in the Dental Assisting Department at ksprague@wccnet.edu
3. Program prerequisite courses:
 - a. ACS 1035 (Introduction to Online Learning)
4. Academic Reading Level of 6 (College Level).
5. Academic Writing Level of 6 (College Level).
6. Current and valid CPR card.
7. Pass all three portions (GC, RHS and ICE) of the Dental Assisting National Board (DANB) Certified Dental Assisting (CDA) Examination or graduate from an American Dental Association (ADA) Commission on Dental Accreditation (CODA) Accredited Dental Assisting program.

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8. Students must be employed in a dental office at least 24 hours per week as a chairside dental assistant. The participating dentist must validate the student's skills (see the Student Agreement of Participation and Dentist Agreement of Participation forms in the admission packet).

9. Residency verification.

Continuing Eligibility Requirements:

Continuing Eligibility for Pathway I (On Campus):

1. Students must purchase an account from a college-designated vendor to obtain a criminal background check and submit health records to the department by the deadlines provided at the mandatory orientation session.
2. Additional background checks may be conducted at any time during the program. Students may be required to have drug testing as well as additional criminal background checks and/or fingerprinting prior to the start of a clinical sequence as requested by specific clinical facilities. Any student found to have a positive drug screen for drugs prohibited by State of Michigan or Federal law (including marijuana) or controlled substances will be dismissed from the program. Failure to receive an acceptable criminal background/fingerprinting at any time, will result in dismissal from the program.
3. Students must complete any other health requirements as designated by the clinical sites.
4. All Dental Assisting (DEN) and support courses to the program must be completed with a minimum grade of C/2.0.
5. Students who are dismissed from the program may not be eligible to reapply to the program.

Continuing Eligibility for Pathway II (ADAEP):

1. Continual employment working a minimum 24 hours per week as a chairside dental assistant during the program is required.
2. All Dental Assisting (DEN) and support courses to the program must be completed with a minimum grade of C/2.0.
3. Students may be required to have drug testing as well as criminal background checks and/or fingerprinting as requested by the Dental Assisting Department. Any student found to have a positive drug screen for drugs prohibited by State of Michigan or Federal law (including marijuana) or controlled substances will be dismissed from the program. Failure to receive an acceptable criminal background/fingerprinting at any time, will result in dismissal from the program.
4. Students who are dismissed from the program may not be eligible to reapply to the program.

Minimum Option Credits Required for the Program:

38

Dental Assisting Options

Pathway I (38 credits)

Semester 1 (Fall) (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

Semester 2 (Winter) (12 credits)

DEN 118	Preventive Dentistry	2
DEN 120	Patient Records	1
DEN 128	Dental Radiography Practice	1
DEN 129	Patient Assessment	2
DEN 130	Clinical Practice	2
DEN 131	Principles of Dental Specialties	4

Semester 3 (Spring/Summer) (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

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
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First Semester (16 credits)

DEN 204	Advanced Functions	4
DEN 230	Alternative Dental Assisting Education Project	9
BMG 207 or	Business Communication	

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ENG 111 Composition I* 3

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 Occupational Studies.

Program Information Report

Health Care Foundations (CTHCF)

Certificate

Program Effective Term: Fall 2020

High Demand Occupation

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, Surgical Technology and general education requirements for an Associate in Applied Science degree. It provides students applying for a "high demand" healthcare associate's 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 healthcare programs are encouraged to contact a counselor and enroll in the Healthcare Exploration course.

Minimum Concentration Credits Required for the Program:

24

Select a concentration for requirements and total credits required for program.

Health Care Foundations Concentrations

Nursing Intent (PNUR) (28 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 or	Composition I	
ENG 226	Composition II	3
HSC 100 or	Basic Nursing Assistant Skills	
	Current or expired Certified Nursing Assistant (CNA) Certification	0
	HSC 101 is strongly recommended but not required	0
HSC 131	CPR/AED and First Aid	1
MTH 160 or	Basic Statistics	
	Any Math Level 4 or higher course	3
PHL 244	Ethical and Legal Issues in Health Care	3
PSY 206	Life Span Developmental Psychology	4
BIO 147 or	Hospital Microbiology	
BIO 237	Microbiology	1
BIO 212	Pathophysiology: Alterations in Structure and Function	4
HSC 103	Healthcare Exploration	1

Physical Therapist Assistant Intent (PPTA) (27 credits)

BIO 111	Anatomy and Physiology - Normal Structure and Function*	5
COM 101 or	Fundamentals of Speaking	
COM 102	Interpersonal Communication	3
ENG 111 or	Composition I	
ENG 226	Composition II	3
HSC 101 or	Healthcare Terminology	
HSC 124	Medical Terminology	1
HSC 131	CPR/AED and First Aid	1
HSC 147	Growth and Development	3
MTH 160	Basic Statistics	4
PHL 244	Ethical and Legal Issues in Health Care	3
PSY 100	Introduction to Psychology	3
HSC 103	Healthcare Exploration	1

Radiography Intent (PRAD) (24 credits)

BIO 109 or	Essentials of Human Anatomy and Physiology	
BIO 111	Anatomy and Physiology - Normal Structure and Function*	4
COM 101 or	Fundamentals of Speaking	
COM 102	Interpersonal Communication	3
ENG 111 or	Composition I	
ENG 226	Composition II	3
HSC 101 or	Healthcare Terminology	
HSC 124	Medical Terminology	1
HSC 131	CPR/AED and First Aid	1
MTH 125 or	Everyday College Math	
MTH 160 or	Basic Statistics	

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	Any Math Level 4 or higher course	4
PHL 244	Ethical and Legal Issues in Health Care	3
RAD 100	Introduction to Diagnostic Imaging	2
PSY 100 or SOC 100	Introduction to Psychology Principles of Sociology	3

Surgical Technology Intent (PSUR) (27 credits)

BIO 111	Anatomy and Physiology - Normal Structure and Function*	5
BIO 237	Microbiology	4
ENG 111 or ENG 226	Composition I Composition II	3
	Soc. Sci. Elective(s)	3
	Speech/Comp Elective(s)	3
HSC 101 or HSC 124	Healthcare Terminology Medical Terminology	1
MTH 125 or MTH 160 or	Everyday College Math Basic Statistics	
	Any Math Level 4 or higher course	3
PHL 244	Ethical and Legal Issues in Health Care	3
HSC 131	CPR/AED and First Aid	1
HSC 103	Healthcare Exploration	1

No Specialty (OTH) (24 credits)

BIO 101 or BIO 102 or BIO 109 or BIO 111	Concepts of Biology Human Biology Essentials of Human Anatomy and Physiology Anatomy and Physiology - Normal Structure and Function*	4
COM 101 or COM 102 or COM 200	Fundamentals of Speaking Interpersonal Communication Family Communication	3
ENG 111	Composition I	4
HSC 101	Healthcare Terminology	1
HSC 131	CPR/AED and First Aid	1
HSC 100 or RAD 100 or HSC 103	Basic Nursing Assistant Skills Introduction to Diagnostic Imaging Healthcare Exploration	
	MTH 125, MTH 160, MTH 169, or any Math Level 4 or higher course**	4
PHL 244	Ethical and Legal Issues in Health Care	3
PSY 100 or SOC 100 or PSY 206	Introduction to Psychology Principles of Sociology Life Span Developmental Psychology	3

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

*CEM 101 Introductory Chemistry or high school chemistry is a required support course, with a grade of "C" or better.

**Math requirements vary dramatically from concentration to concentration. Please see an advisor for assistance with selecting an appropriate math course.

Program Information Report

Medical Assisting (CTMA2) Certificate

Program Effective Term: Fall 2020

High Demand Occupation High Skill Occupation

In this program, students will develop comprehensive skills in managing both administrative and clinical duties such as coding, scheduling, arranging for laboratory services, instructing patients about medication and special diets and drawing blood. This program is designed to prepare professional multi-skilled individuals for employment in physician's offices, medical clinics, laboratories and other ambulatory health care facilities. Graduates will be prepared to sit for the medical assisting certification exam.

Program Admission Requirements:

High school diploma or GED

Continuing Eligibility Requirements:

1. Students may be required to have a criminal background check and/or fingerprinting prior to the start of their clinical experience as requested by clinical facilities.
2. Completed health history form (physical examination)
3. Negative TB skin test
4. Current health insurance
5. Current BLS/CPR certification
6. Complete all courses with a minimum grade of "C"

First Semester		(9 credits)
MED 101	Introduction to Medical Assisting	1
MED 104	Medical Assistant Math and Pharmacology	1
MED 112	Medical Assistant Administrative I	2
MED 114	Medical Assistant Lab I	3
MED 116	Insurance Billing and Coding Basics for the Medical Assistant	2
Second Semester		(8 credits)
MED 210	Medical Assistant Administrative II	2
MED 221	Medical Assistant Lab II	3
MED 241	Medical Assistant Clinical Practice	2
MED 245	Medical Assisting Credentialing Exam Review	1
Minimum Credits Required for the Program:		17

Program Information Report

Medical Billing and Coding (CTMBC)

Certificate

Program Effective Term: Fall 2020

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.

Program Admission Requirements:

BIO 109 or BIO 111 and HSC 124 with a C minimum grade requirement.

Continuing Eligibility Requirements:

All courses must be completed with a GPA of 2.0 or better.

Major/Area Requirements (7 credits)

BIO 109 or	Essentials of Human Anatomy and Physiology	4
BIO 111	Anatomy and Physiology - Normal Structure and Function	4
HSC 124	Medical Terminology	3

First Semester (12 credits)

MBC 185	Medical Computer Skills and Electronic Health Records	3
MBC 205	Introductory ICD Coding	3
MBC 215	Introductory Procedural Coding	3
MBC 223	Medical Office Procedures	3

Second Semester (10 credits)

MBC 210	Intermediate/Advanced ICD-10 CM Coding	3
MBC 220	Intermediate/Advanced Procedural Coding	3
MBC 224	Medical Insurance and Reimbursement	4

Third Semester (3 credits)

MBC 250	Medical Coding Practicum	3
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Minimum Credits Required for the Program: 32

Program Information Report

Sterile Processing (CTSPTF)

Certificate

Program Effective Term: Fall 2020

This certificate program prepares students 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 successful 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.

Program Admission Requirements:

Eligibility requirements that must be met prior to beginning SUR 101:

- Attendance at course orientation
- Successful background check per explanation at orientation

Continuing Eligibility Requirements:

Eligibility requirements that must be met prior to beginning SUR 108:

- Negative TB skin test
- Complete Health History Form (physical examination)
- Hepatitis immunization series or titers on file
- Health insurance
- Current BLS/CPR certification
- All Surgical Technology (SUR) courses must be completed with a minimum grade of C+/2.3
- Background check/drug screen/fingerprinting per policy of hospital

Major/Area Requirements		(16 credits)
ACS 108	Critical Reading and Thinking*	4
HSC 131	CPR/AED and First Aid	1
SUR 101	Introduction to Sterile Processing	6
SUR 102	Introduction to Sterile Processing Equipment	2
SUR 108	Sterile Processing Clinical	2
SUR 109	Sterile Processing Seminar	1

Minimum Credits Required for the Program: 16

Notes:

*Students who have a reading and writing levels of 6 may substitute an alternative 4 credit hour course(s). Please see the list available from the program coordinator or advisor.

Program Information Report

Nursing, Licensed Practical Nurse to Registered Nurse (APNURL)

Associate in Applied Science Degree

Program Effective Term: Fall 2020

This Licensed Practical Nursing to Registered Nurse (LPN to RN) program prepares students for the National Council Licensure Examination for Registered Nursing (NCLEX-RN). Credit earned in the nursing program may transfer to a bachelor's degree (BSN) completion program. Learning opportunities are in the classroom, simulation lab, clinical setting, and community. Students will be prepared to succeed in a dynamic healthcare environment.

Applying for Admission to the Program:

A formal application and acceptance to the program is required. Application packets may be downloaded from WCC's Student Connection, Health and Second Tier Program, information page: <http://www.wccnet.edu/studentconnection/admissions/health-second-program/> . Completed and signed applications must be submitted to the Health and Second Tier Admissions Office in the Student Connection, located on the second floor of the Student Center Building during the dates indicated on the application.

Requirement After Acceptance

Upon acceptance, students must purchase an account from a college-designated vendor to obtain a criminal background check and to track their health records. The criminal background check and health records must be submitted to the designated vendor. Specific information regarding the college-designated vendor, health records, and deadline dates will be included in the program acceptance letter and/or provided at the mandatory orientation session.

Program Admission Requirements:

WCC uses a competitive admission process for high demand programs in health care. WCC offers this LPN to RN program option every Spring/Summer semester for LPNs who have successfully completed the admission requirements for this program and prerequisites for NUR 134. Please see the application packet for the number of seats available each term. There are multiple requirements that must be completed prior to submitting an application for admission. Students with two WCC NUR course failures or withdrawals in failing status are not eligible to apply to this program. Applicants are required to meet all admission criteria and will be ranked based on a point system. The best qualified applicants will be selected for admission to the program. Student residency will be a weighted factor in the process. Details regarding WCC's Admission to High Demand Programs policy including priority levels are on WCC's Board of Trustees page: <http://www.wccnet.edu/trustees/policies/2005/>. Details regarding WCC's point scales that are used to calculate points are on WCC's Student Connection, Health and Second Tier Program, information page: <http://www.wccnet.edu/studentconnection/admissions/health-second-program/> .

Prerequisite and program requirements along with WCC's point system and scales are reviewed annually and subject to change. Students are expected to meet the prerequisite and program requirements of the catalog term for the semester in which they first begin the program.

Requirements for application are:

1. Admission to WCC.
2. All applicants are required to have a mandatory meeting with an advisor prior to applying to the program.
3. Verification of current, unrestricted LPN License.
4. Employment Verification Form showing at least 2,080 hours of employment within the last 2 years as a Licensed Practical Nurse or Licensed Vocational Nurse.
5. Program prerequisite courses:
 - a. MTH 160 or MTH 176 or a math course numbered 176 or higher, with a minimum grade of C/2.0.
 - b. BIO 111 with a minimum grade of B-/2.7.
 - c. COM 101, COM 102 or COM 200 with a minimum grade of C/2.0.
 - d. ENG 111 with a minimum grade C/2.0.
6. Pass the current version of the Test of Essential Academic Skills, ATI-TEAS <http://nursing.wccnet.edu/teas/>, by achieving the following minimum scores:
 - Math proficiency - 60 percent or higher
 - Reading proficiency - 70 percent or higher
 - English and Language Usage proficiency - 60 percent or higher
 - Science proficiency - 45 percent or higher
 If repeated TEAS test attempts are needed to meet required scores, the highest subject score from each attempt will be applied towards admission requirements. Students are allowed three (3) attempts within a five (5) year period.
7. Signed Abilities Statement. 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.
8. Residency verification.

After Acceptance

1. Students are required to submit health records, undergo drug screening and complete a full background check paid to an outside vendor selected by the College.
2. Students must request up to fourteen (14) WCC prior learning credits and pay associated fees for their current LPN

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license/experience as needed to reach a minimum 60 credit hours. Nursing faculty will work with students to determine the correct number of hours.

3. 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.

Continuing Eligibility Requirements:

- Program courses are sequential and complemented with appropriate support courses.
- All Registered Nursing (NUR) courses must be completed with a minimum grade of C+/2.3 and all support courses to the program must be completed with a minimum grade of C/2.0 unless otherwise specified.
- Students are required to adhere to rules of the American Nursing Association (ANA) Nursing Code of Ethics.
- Additional criminal background checks may be conducted at any time during the program. Students may be required to have drug testing as well as additional criminal background checks and/or fingerprinting prior to the start of a clinical sequence as requested by specific clinical facilities. Any student found to have a positive drug screen for drugs prohibited by State of Michigan or Federal law (including marijuana) or controlled substances will be dismissed from the program. Failure to receive an acceptable criminal background/fingerprinting at any time, will result in dismissal from the program. Any cost, if indicated, for these checks is the responsibility of the student.
- Students in the Nursing (LPN to RN) 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.
- Students who are dismissed from the program may not be eligible to reapply to the program.

Major/Area Requirements		(16 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
MTH 160 or	Basic Statistics	
	Any Math Level 4 or higher course	4
First Semester		(11 credits)
BIO 212	Pathophysiology: Alterations in Structure and Function	4
NUR 134	Nursing: LPN to RN Transition Course	3
PSY 206	Life Span Developmental Psychology	4
Second Semester		(11 credits)
NUR 138	Nursing Concepts III	8
PHL 244	Ethical and Legal Issues in Health Care	3
Third Semester		(8 credits)
NUR 288	Nursing Concepts IV	8
Requirements		(14 credits)
	LPN unrestricted license and experiential learning; upon acceptance, students must formally request WCC credits for prior learning and pay any associated fees to WCC as needed, up to a maximum of 14 credits, to reach minimum 60 credits.	14
Minimum Credits Required for the Program:		60

Program Information Report

Nursing, Registered (APNURS) Associate in Applied Science Degree

Program Effective Term: Fall 2020

High Demand Occupation High Skill Occupation High Wage Occupation

The WCC Nursing Program prepares students for the National Council Licensure Examination for Registered Nurses (NCLEX-RN). Credit earned in the nursing program can transfer to a BSN completion program. Learning opportunities are in the classroom, simulation lab, clinical setting and community. Students will be prepared to succeed in a dynamic healthcare environment.

For more detailed information regarding the health care programs at WCC, please visit <http://health.wccnet.edu> .

Articulation:

Chamberlain College of Nursing, BSN degree;
Concordia University - Wisconsin, RN-BS-Nc degree;
Eastern Michigan University, BSN degree;
Siena Heights University, BSN 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/curriculum/articulation/levelone/colleges/>.

Applying for Admission to the Program:

A formal application and acceptance to the program is required. Application packets may be downloaded from WCC's Student Connection, Health and Second Tier Program, information page: <http://www.wccnet.edu/studentconnection/admissions/health-second-program/> . Completed and signed applications must be submitted to the Health and Second Tier Admissions Office in the Student Connection, located on the second floor of the Student Center Building during the dates indicated on the application.

Requirement After Acceptance

Upon acceptance, students must purchase an account from a college-designated vendor to obtain a criminal background check and to track their health records. The criminal background check and health records must be submitted to the designated vendor. Specific information regarding the college-designated vendor, health records, and deadline dates will be included in the program acceptance letter and/or provided at the mandatory orientation session.

There is mandatory attendance at the new student orientation session upon acceptance into the program. Students who do not make admission but are given alternate candidate status will be required to attend orientation to be eligible to move to accepted status if a seat becomes available.

Program Admission Requirements:

WCC uses a competitive admission process for high demand programs in health care. Each year, approximately 100 students are accepted to the program; please see the application packet for the number of seats available each term. There are multiple requirements that must be completed prior to submitting an application for admission. Students with two WCC NUR course failures or withdrawals in failing status are not eligible to apply to this program. Applicants are required to meet all admission criteria and will be ranked based on a point system. The best qualified applicants will be selected for admission to the program. Student residency will be a weighted factor in the process. Details regarding WCC's Admission to High Demand Programs policy including priority levels are on WCC's Board of Trustees page: <http://www.wccnet.edu/trustees/policies/2005/>. Details regarding WCC's point scales that are used to calculate points are on WCC's Student Connection, Health and Second Tier Program, information page: <http://www.wccnet.edu/studentconnection/admissions/health-second-program/> .

Prerequisite and program requirements along with WCC's point system and scales are reviewed annually and subject to change. Students are expected to meet the prerequisite and program requirements of the catalog term for the semester in which they first begin the program.

Students are encouraged to complete required support courses prior to beginning the program. This is a full-time program; no part-time option is available.

Requirements for application are:

1. Admission to WCC.
2. All applicants are required to have a mandatory meeting with an advisor prior to applying to the program.
3. Program prerequisite courses:
 - a. MTH 160 or MTH 176 or a math course numbered 176 or higher with a minimum grade of C/2.0.
 - b. BIO 111 with a minimum grade of B-/2.7.
 - c. COM 101, COM 102 or COM 200 with a minimum grade of C/2.0.
 - d. ENG 111 with a minimum grade C/2.0.
4. Current or expired Certified Nurse Aide (CNA) certification from the state of Michigan.

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5. Pass the current version of the Test of Essential Academic Skills, ATI-TEAS <http://nursing.wccnet.edu/teas/>, by achieving the following minimum scores:

- Math proficiency - 60 percent or higher
- Reading proficiency - 70 percent or higher
- English and Language Usage proficiency - 60 percent or higher
- Science proficiency - 45 percent or higher

If repeated TEAS test attempts are needed to meet required scores, the highest subject score from each attempt will be applied towards admission requirements. Students are allowed three (3) attempts within a five (5) year period.

- 6. Signed Abilities Statement. 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.
- 7. Residency verification.
- 8. Upon acceptance, students are required to submit health records, undergo drug screening and criminal background checks using a vendor selected by the College.
- 9. 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.

Continuing Eligibility Requirements:

-Additional criminal background checks may be conducted at any time during the program. Students may be required to have drug testing as well as additional criminal background checks and/or fingerprinting prior to the start of a clinical sequence as requested by specific clinical facilities. Any student found to have a positive drug screen for drugs prohibited by State of Michigan or Federal law (including marijuana) or controlled substances will be dismissed from the program. Failure to receive an acceptable criminal background/fingerprinting at any time, will result in dismissal from the program. Any cost, if indicated, for these checks is the responsibility of the student.

-Program courses are sequential and complemented with appropriate support courses.

-All Registered Nursing (NUR) courses must be completed with a minimum grade of C+/2.3 and all support courses to the program must be completed with a minimum grade of C/2.0 unless otherwise specified.

-Students are required to adhere to rules of the American Nursing Association (ANA) Nursing Code of Ethics.

-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 are required to submit health records annually while in the program.

-Students in the Nursing program will be required to purchase special uniforms and supplies throughout the duration of the program.

-Students who are dismissed from the program may not be eligible to reapply to the program.

Major/Area Requirements		(15 credits)
BIO 111	Anatomy and Physiology - Normal Structure and Function	5
ENG 111	Composition I	4
COM 101 or	Fundamentals of Speaking	
COM 102 or	Interpersonal Communication	
COM 200	Family Communication	3
	MTH 160 (or MTH 167 if completed and passed Winter 2017 or earlier) or any math level 4 or higher course	3
First Semester		(16 credits)
BIO 147	Hospital Microbiology*	1
BIO 212	Pathophysiology: Alterations in Structure and Function	4
NUR 108	Nursing Concepts I	8
NUR 115	Pharmacology	3
Second Semester		(12 credits)
NUR 128	Nursing Concepts II	8
PSY 206	Life Span Developmental Psychology	4
Third Semester		(11 credits)
NUR 138	Nursing Concepts III	8
PHL 244	Ethical and Legal Issues in Health Care	3
Fourth Semester		(8 credits)
NUR 288	Nursing Concepts IV	8
Minimum Credits Required for the Program:		62

Notes:

*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.

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Program Information Report

Occupational Studies (APOST)

Associate in Applied Science Degree

Program Effective Term: **Fall 2020**

High Demand Occupation High Skill Occupation High Wage Occupation

Program is also available online

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. 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.

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

General Studies Program Requirements	(60 credits)
Complete the General Education Requirements for the Associate in Applied Science Degree:	18
Writing/Composition (3)	
Second Writing/Composition or Communication (3)	
Math (3)	
Natural Sciences (3)	
Social and Behavioral Science (3)	
Arts and Humanities (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	22
Minimum Credits Required for the Program:	60

Program Information Report

Physical Therapist Assistant (APPTA)

Associate in Applied Science Degree

Program Effective Term: Fall 2020

High Demand Occupation High Skill Occupation High Wage Occupation

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. Upon successful completion of this program, the student will receive an Associate in Applied Science Degree in Physical Therapist Assistant and is eligible to apply for Michigan licensure and take the National Physical Therapy Examination administered by the Federation of State Boards of Physical Therapy (FSBPT).

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/curriculum/articulation/levelone/colleges/>.

Applying for Admission to the Program:

A formal application and acceptance to the program is required. Application packets may be downloaded from WCC's Student Connection, Health and Second Tier Program, information page <http://www.wccnet.edu/studentconnection/admissions/health-second-program/>. Completed and signed applications must be submitted during the dates indicated on the application to the Health and Second Tier Admissions Office in the Student Connection, located on the second floor of the Student Center Building.

Requirement After Acceptance

Upon notification of acceptance to the program students must purchase an account from a college-designated vendor to obtain a criminal background check and to track their health records. The criminal background check must be submitted to the designated vendor before attending the first program mandatory orientation session. The health requirements must be completed within the dates provided in the acceptance letter and submitted to the designated vendor by the deadline provided in the acceptance letter. Complete WCC Ready for OnLine Learning (ROLL) and provide verification of successful completion.

Program Admission Requirements:

Washtenaw Community College uses a competitive admission process for high demand programs in health care. Each year, approximately 20 students are accepted to the program for a Fall semester start. There are multiple requirements that must be completed prior to submitting an application for admission. This is a full-time program; no part-time option is available. For detailed information regarding admission to this health care program, please visit our Health Care website at <http://health.wccnet.edu>.

Prerequisite and program requirements along with WCC's point system and scales are reviewed annually and subject to change. Students are expected to meet the prerequisite and program requirements of the catalog term for the semester in which they first begin the program. Details regarding WCC's Admission to High Demand Programs policy including priority levels are on WCC's Board of Trustees policy page: <http://www.wccnet.edu/trustees/policies/2005/>. Details regarding WCC's point scales that are used to calculate points are on WCC's Student Connection, Health and Second Tier Program, information page: <http://www.wccnet.edu/studentconnection/admissions/health-second-program/>.

Requirements for application are:

1. Admission to WCC.
2. All applicants are required to have a mandatory meeting with an advisor prior to applying to the program.
3. Program prerequisite courses:
 - a. Academic Math Level 3 or higher or MTH 160 with a minimum grade of C/2.0.
 - b. HSC 101 with a minimum grade of C/2.0.
 - c. BIO 111 with a minimum grade of B-/2.7.
 - d. ENG 111 with a minimum grade of C/2.0
4. Minimum cumulative program prerequisite GPA of 2.8.
5. Signed Abilities Statement (refer to the form in the admission packet). WCC reserves the right to request, before and during the program, that students successfully demonstrate specific physical and cognitive abilities related to the program.
6. 20 hours of observations in a physical therapy setting with a minimum of three (3) hours in at least three (3) different types of physical therapy settings (refer to the Clinical Observation form in the admission packet).
7. Residency verification.

Continuing Eligibility Requirements:

1. Additional criminal background checks may be conducted at any time during the program. Students may be required to have drug testing as well as additional criminal background checks and/or fingerprinting prior to the start of a clinical sequence as requested by

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specific clinical facilities. Failure to receive an acceptable drug test and/or criminal background/fingerprinting check at any time, will result in dismissal from the program.

2. Students will be required to submit health records annually while in the program and must complete any other health requirements as designated by the clinical sites.
3. Students will be required to purchase special uniforms and supplies throughout the duration of the program.
4. 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 dismissal from the program.
5. Students must have reliable transportation to clinical education sites which may require a commute of up to one hour.
6. All Physical Therapist Assistant (PTA) courses and support courses to the program must be completed with a minimum grade of C/2.0.
7. Students who are dismissed from the program may not be eligible to reapply to the program.

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

Semester 1 (Fall) (15 credits)

COM 101 or	Fundamentals of Speaking*	3
COM 102	Interpersonal Communication*	3
HSC 147	Growth and Development*	2
PTA 100	Fundamentals of Physical Therapy	3
PTA 150	Therapeutic Procedures I	4
PTA 180	Clinical Kinesiology	4

Semester 2 (Winter) (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

Semester 3 (Fall) (11 credits)

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

Semester 4 (Winter) (6 credits)

PTA 250	Clinical Education III	5
PTA 280	Clinical Concepts	1

Minimum Credits Required for the Program: 62

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.

Program Information Report

Radiography (APRAD)

Associate in Applied Science Degree

Program Effective Term: Fall 2020

High Demand Occupation High Skill Occupation High Wage Occupation

This program prepares students for a career in diagnostic radiology as a radiographer. A radiographer is a technologist who produces images of the human body to aid physicians in the diagnosis and treatment of injuries and diseases. The program curriculum includes a series of courses offered in conjunction with individualized laboratory work and an 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). Radiographers work in a variety of settings including hospitals, clinics, doctors' offices and industry.

The program is accredited by the Joint Review Committee on Education in Radiologic Technology

<http://www.jrcert.org/>

20 N. Wacker Drive, Suite 2850, Chicago, IL 60606-2901, (312)704-5300.

For more detailed information regarding the Radiography Program, please visit the radiography web page at

<http://health.wccnet.edu/radiography/>.

Articulation:

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/curriculum/articulation/levelone/colleges/>.

Applying for Admission to the Program:

A formal application and acceptance to the program is required. Application packets may be downloaded from WCC's Student Connection, Health and Second Tier Program, information page <http://www.wccnet.edu/studentconnection/admissions/health-second-program/> . Completed and signed applications must be submitted during the dates indicated on the application to the Health and Second Tier Admissions Office in the Student Connection, located on the second floor of the Student Center Building.

Requirement After Acceptance

Upon notification of acceptance to the program, students must purchase an account from a college-designated vendor to obtain a criminal background check. Specific information on the college-designator vendor, health records and deadline dates will be included in the program acceptance letter and/or provided at the mandatory orientation session.

Program Admission Requirements:

Washtenaw Community College uses a competitive admission process for high demand programs in health care. Each year, approximately 32 students are accepted to the program for a Spring/Summer semester start. There are multiple requirements that must be completed prior to submitting an application for admission. This is a full-time program; no part-time option is available. For detailed information regarding admission to this health care program, please visit our Health Care website at <http://health.wccnet.edu>.

Prerequisite and program requirements along with WCC's point system and scales are reviewed annually and subject to change. Students are expected to meet the prerequisite and program requirements of the catalog term for the semester in which they first begin the program. Details regarding WCC's Admission to High Demand Programs policy including priority levels are on WCC's Board of Trustees policy page: <http://www.wccnet.edu/trustees/policies/2005/>. Details regarding WCC's point scales that are used to calculate points are on WCC's Student Connection, Health and Second Tier Program, information page: <http://www.wccnet.edu/studentconnection/admissions/health-second-program/> .

Requirements for application are:

1. Admission to WCC.
2. Program prerequisite courses:
 - a. MTH 125, MTH 160 or MTH 176 or a math course numbered 176 or higher with a minimum grade of C/2.0.
 - b. HSC 101 or HSC 124 with a minimum grade of B-/2.7.
 - c. BIO 109 or BIO 111 with a minimum grade of C+/2.3.
 - d. RAD 100 with a minimum grade of B-/2.7.
3. Signed Abilities Statement (refer to the admission packet). WCC reserves the right to request, before and during the program, that students successfully demonstrate specific physical and cognitive abilities related to this program.
4. Residency verification.

Continuing Eligibility Requirements:

1. Additional criminal background checks may be conducted at any time during the program. Students may be required to have drug testing as well as 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 drug test and/or criminal background/fingerprinting check at any time, will

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result in dismissal from the program unless the student has documentation from ARRT of their eligibility to take the certification exam.

2. Students will be required to attend a hospital orientation session prior to starting their clinical rotation.
3. Students will be required to submit health records annually while in the program and must complete any other health requirements as designated by the clinical sites.
4. Students will be required to purchase special uniforms and supplies throughout the duration of the program.
5. 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 dismissal from the program.
6. All Radiography (RAD) courses must be completed with a minimum grade of C-/1.7 and all support courses to the program must be completed with a minimum grade of C/2.0 unless otherwise specified.
7. Students must have reliable transportation to clinical education sites which may require a commute of up to one hour.
8. Students who are dismissed from the program may not be eligible to reapply to the program.

Major/Area Requirements (10 credits)

BIO 109 or	Essentials of Human Anatomy and Physiology*	4
BIO 111	Anatomy and Physiology - Normal Structure and Function*	4
HSC 101 or	Healthcare Terminology*	1
HSC 124	Medical Terminology*	1
MTH 125 or	Everyday College Math*	3
MTH 160 or	Basic Statistics*	3
MTH 176 or	College Algebra*	3
	(MTH 167 or MTH 169 if passed Fall 2017 or earlier) or Any Math Level 4 or Higher Course*	3
RAD 100	Introduction to Diagnostic Imaging*	2

Semester 1 (Spring/Summer) (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

Semester 2 (Fall) (12 credits)

COM 101 or	Fundamentals of Speaking**	3
COM 102	Interpersonal Communication**	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

Semester 3 (Winter) (9 credits)

	Social and Behavioral Science Elective (PSY 100 or SOC 100)**	3
RAD 120	Clinical Education	2
RAD 123	Radiographic Positioning II	2
RAD 215	Radiography of the Skull	2

Semester 4 (Spring/Summer) (6 credits)

RAD 150	Clinical Education	3
RAD 218	Radiation Biology and Protection	3

Semester 5 (Fall) (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

Semester 6 (Winter) (10 credits)

PHL 244	Ethical and Legal Issues in Health Care	3
RAD 223	Sectional Anatomy	2
RAD 225	Clinical Education	3
RAD 232	Digital Imaging in Radiography	2

Semester 7 (Spring/Summer) (2 credits)

RAD 240	Clinical Education	2
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Minimum Credits Required for the Program: 68

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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.

***Students who are planning to transfer to a 4-year university should follow the Michigan Transfer Agreement (MTA). See an academic advisor for more information.

Program Information Report

Surgical Technology (APST)

Associate in Applied Science Degree

Program Effective Term: Fall 2020

A 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 perioperative 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.

Applying for Admission to the Program:

A formal application and acceptance to the program is required. Application packets may be downloaded from WCC's Student Connection, Health and Second Tier Program, information page <http://www.wccnet.edu/studentconnection/admissions/health-second-program/> . Completed and signed applications must be submitted during the dates indicated on the application to the Health and Second Tier Admissions Office in the Student Connection, located on the second floor of the Student Center Building.

Requirements After Acceptance

Upon acceptance, students must purchase an account from a college-designated vendor to obtain a criminal background check and to track their health records. The criminal background check and health records must be submitted to the designated vendor. Specific information regarding the college-designated vendor, health records, and deadline dates will be provided at the mandatory orientation session.

Program Admission Requirements:

Washtenaw Community College uses a competitive admission process for high demand programs in health care. Each year, approximately 20 students are accepted to the program for a Fall semester start. There are multiple requirements that must be completed prior to submitting an application for admission. This is a full-time program; no part-time option is available. For detailed information regarding admission to this health care program, please visit our Health Care website at <http://health.wccnet.edu> .

Prerequisite and program requirements along with WCC's point system and scales are reviewed annually and subject to change. Students are expected to meet the prerequisite and program requirements of the catalog term for the semester in which they first begin the program. Details regarding WCC's Admission to High Demand Programs policy including priority levels are on WCC's Board of Trustees policy page: <http://www.wccnet.edu/trustees/policies/2005/> . Details regarding WCC's point scales that are used to calculate points are on WCC's Student Connection, Health and Second Tier Program, information page: <http://www.wccnet.edu/studentconnection/admissions/health-second-program/> .

Requirements for application are:

1. Admission to WCC.
2. Program prerequisite courses:
 - a. MTH 125, MTH 160, MTH 176 or a math course numbered 176 or higher with a minimum grade of C/2.0.
 - b. HSC 101 or HSC 124 with a minimum grade of B-/2.7.
 - c. BIO 111 with a minimum grade of B-/2.7.
3. Signed Abilities Statement (in the admissions packet). WCC reserves the right to request, before and during the program, that students successfully demonstrate specific physical and cognitive abilities related to this program.
4. Students must possess a high school diploma or GED prior to clinical courses.
5. Students must be 18 years old prior to clinical courses.
6. Residency verification.

Continuing Eligibility Requirements:

1. Additional background checks may be conducted at any time during the program. Students may be required to have drug testing as well as additional criminal background checks and/or fingerprinting prior to the start of a clinical sequence as requested by specific clinical facilities. Any student found to have a positive drug screen for drugs prohibited by State of Michigan or Federal law (including marijuana) or controlled substances will be dismissed from the program. Failure to receive an acceptable criminal background/fingerprinting at any time, will result in dismissal from the program.
2. Students will be required to attend a hospital orientation session prior to starting their clinical rotation.
3. Students will be required to submit health records annually while in the program and must complete any other health requirements as designated by the clinical sites.
4. Students will be required to purchase special uniforms and supplies throughout the duration of the program.
5. Students will be 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 dismissal from the program.
6. All Surgical Technology (SUR) courses must be completed with a minimum grade of C+/2.3 and all support courses to the program must be completed with a minimum grade of C/2.0 unless otherwise specified.
7. Students must have reliable transportation to clinical education sites, which may require a commute of up to one hour.
8. Students who are dismissed from the program may not be eligible to reapply to the program.

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Major/Area Requirements		(9 credits)
BIO 111	Anatomy and Physiology - Normal Structure and Function	5
HSC 101 or	Healthcare Terminology	
HSC 124	Medical Terminology	1
MTH 125 or	Everyday College Math	
MTH 160 or	Basic Statistics	
MTH 176 or	College Algebra	
	Any Academic Math Level 4 or higher Math Course	3
Semester 1 (Fall)		(17 credits)
SUR 101	Introduction to Sterile Processing	6
BIO 237	Microbiology	4
ENG 111	Composition I	4
COM 101 or	Fundamentals of Speaking	
COM 102	Interpersonal Communication	3
Semester 2 (Winter)		(12 credits)
SUR 110	Introduction to Surgical Technology/Surgical Patient	5
SUR 170	Surgical Pharmacology	2
SUR 180	Surgical Procedures I	3
SUR 181	Surgical Procedures I Lab	2
Semester 3 (Spring/Summer)		(3 credits)
HSC 131	CPR/AED and First Aid	1
SUR 270	Biomedical Science and Minimally Invasive Surgery	2
Semester 4 (Fall)		(10 credits)
SUR 210	Surgical Procedures II	3
SUR 211	Surgical Procedures II Lab	2
SUR 231	Clinical Education I	1
	Soc. Sci. Elective(s)	3
	Elective(s) to reach a minimum 60 credits	1
Semester 5 (Winter)		(10 credits)
SUR 241	Clinical Education II	4
SUR 250	Surgical Technology Seminar	3
PHL 244	Ethical and Legal Issues in Health Care	3
Minimum Credits Required for the Program:		61

Program Information Report

Health Program Preparation (ASHPP)

Associate in Science Degree

Program Effective Term: Fall 2020

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.

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/curriculum/articulation/levelone/colleges/>.

Continuing Eligibility Requirements:

Minimum cumulative GPA of 2.8 or minimum GPA for intended health program

First Semester		(13 credits)
Elective	Soc. Sci. Elective(s) 1	3
ENG 111	Composition I	4
Elective	Math Elective(s)	3
Elective	Nat. Sci. Elective(s)	3
Second Semester		(15 credits)
Elective	Nat. Sci. Lab Elective(s) 2	3
Elective	Soc. Sci. Elective(s) 2	3
Elective	Speech/Comp. Elective(s) 2	3
	Area Studies Elective(s)*	6
Third Semester		(15 credits)
Elective	Arts/Human. Elective(s) 1	3
HSC 101	Healthcare Terminology	1
	Area Studies Elective*	3
	Area Studies Elective*	3
	Elective(s) to reach a minimum of 60 credits**	5
Fourth Semester		(17 credits)
Elective	Arts/Human. Elective(s) 2	3
Elective	General Education Elective(s) (0-2 credits) to reach a minimum 30 General Education Credits	2
Elective	Area Studies Elective*	3
Elective	Area Studies Elective*	3
Elective	Area Studies Elective(s)*	6
Minimum Credits Required for the Program:		60

Notes:

*Select courses as designated for your intended program and school of choice.

**Students may use one of the following: HSC 100, HSC 103, or RAD 100.

Program Information Report

Math and Science (ASMSAS)

Associate in Science Degree

Program Effective Term: Fall 2020

High Demand Occupation High Skill Occupation High Wage Occupation

This program prepares students to transfer to a four-year college or university to complete a bachelor's degree in actuarial science, biology, chemistry, math, or pharmacy. 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. These concentrations may also list courses used to meet General Education requirements.

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

Mathematics (MATH)

MTH 160 Basic Statistics
 MTH 191 Calculus I
 MTH 192 Calculus II
 MTH 197 Linear Algebra
 MTH 293 Calculus III
 MTH 295 Differential Equations

Pre-Actuarial Science (PPAS)

ECO 211 Principles of Economics I
 ECO 222 Principles of Economics II
 MTH 191 Calculus I
 MTH 192 Calculus II
 MTH 197 Linear Algebra
 MTH 293 Calculus III

Pre-Pharmacy (PPHA)

Two Restricted Electives in Biology (see below)

CEM 211 Organic Chemistry I
 CEM 222 Organic Chemistry II
 PHY 111 General Physics I
 PHY 122 General Physics II

Biology Restricted Electives for Pre-Pharmacy (PPHA): BIO 111, BIO 161, BIO 162, BIO 208, BIO 237, BIO 215, BIO 227 or BIO 228

Optional Transfer Courses for Pre-Pharmacy (PPHA): MTH 160, MTH 192, along with other Biology restricted electives. See a program advisor to select appropriate Biology courses.

Articulation:

This program will fulfill the Michigan Transfer Agreement (MTA) requirements provided the student takes two science courses from two different disciplines. One course must have a lab component. Students must have MTA posted on their transcripts 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 biology and chemistry concentrations require one year of high school chemistry or CEM 101 with a "C" or better to enroll in CEM 111.

Minimum Concentration Credits Required for the Program:

Select a concentration for requirements and total credits required for program.

60

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Math and Science Concentrations

Biology/Pre-Medicine (BMED) (60 credits)**First Semester (17 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	Elective(s) to reach minimum 60 credits	5

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
Elective	Speech/Comp. Elective(s)	3
Elective	Soc. Sci. Elective(s) 1	3
Elective	Select one course from the following: BIO 111, BIO 208***, BIO 215, BIO 227, BIO 228 or BIO 237	4

Fourth Semester (13 credits)

CEM 222	Organic Chemistry II	4
Elective	Arts/Human. Elective(s) 1	3
Elective	Soc. Sci. Elective(s) 2	3
Elective	Arts/Human. Elective(s) 2	3

Minimum Credits Required for the Concentration or Option: 60**Chemistry/Pre-Medicine (CMED) (60 credits)****First Semester (16 credits)**

CEM 111	General Chemistry I	4
MTH 191	Calculus I	5
PHY 111	General Physics I	4
Elective	Elective(s) to reach minimum 60 credits	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
Elective	Speech/Comp. Elective(s)	3
MTH 197	Linear Algebra	4
Elective	Soc. Sci. Elective(s) 1	3

Fourth Semester (14 credits)

Elective	Elective(s) to reach minimum 60 credits	1
CEM 222	Organic Chemistry II	4
Elective	Arts/Human. Elective(s) 1	3
Elective	Soc. Sci. Elective(s) 2	3
Elective	Arts/Human. Elective(s) 2	3

Minimum Credits Required for the Concentration or Option: 60**Mathematics (MATH) (60 credits)****First Semester (15 credits)**

Elective	Nat. Sci. Elective(s)	3
MTH 191	Calculus I	5
Elective	Select one course from the following: CPS 120, CPS 141, CPS 161 or CPS 171	3

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ENG 111	Composition I	4
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Second Semester (14 credits)

Elective	Nat. Sci. Lab Elective(s)	3
MTH 160	Basic Statistics	4
MTH 192	Calculus II	4
Elective	Soc. Sci. Elective(s) 1	3

Third Semester (17 credits)

Elective	Speech/Comp. Elective(s)	3
Elective	Elective(s) to reach minimum 60 credits	3
MTH 197	Linear Algebra	4
MTH 293	Calculus III	4
Elective	Soc. Sci. Elective(s) 2	3

Fourth Semester (14 credits)

MTH 295	Differential Equations	4
Elective	Arts/Human. Elective(s) 1	3
Elective	Arts/Human. Elective(s) 2	3
Elective	Elective(s) to reach a minimum of 60 credits.	4

Minimum Credits Required for the Concentration or Option: 60**Pre-Actuarial Science (PPAS) (60 credits)****First Semester (16 credits)**

ACC 111	Principles of Accounting I	3
CPS 161	An Introduction to Programming with Java	4
ENG 111	Composition I	4
MTH 191	Calculus I	5

Second Semester (16 credits)

ACC 122	Principles of Accounting II	3
ECO 211	Principles of Economics I	3
Elective	Nat. Sci. Elective(s)	3
MTH 192	Calculus II	4
Elective	Arts/Human. Elective(s) 1	3

Third Semester (13 credits)

ECO 222	Principles of Economics II	3
MTH 197	Linear Algebra	4
Elective	Nat. Sci. Lab Elective(s)	3
Elective	Soc. Sci. Elective(s) 2+	3

Fourth Semester (15 credits)

MTH 293	Calculus III	4
Elective	Arts/Human. Elective(s) 2++	3
Elective	Speech/Comp. Elective(s)	3
Elective	Elective(s) to reach minimum 60 credits	5

Minimum Credits Required for the Concentration or Option: 60**Pre-Pharmacy (PPHA) (60 credits)****First Semester (16 credits)**

Elective	Biology Restricted Elective	4
CEM 111	General Chemistry I	4
MTH 191	Calculus I	5
Elective	Arts/Human. Elective(s)	3

Second Semester (15 credits)

Elective	Restricted Biology Elective	4
CEM 122	General Chemistry II	4
ENG 111	Composition I	4

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Elective	Elective(s) to reach minimum 60 credits	3
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Third Semester	(17 credits)
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CEM 211	Organic Chemistry I	4
Elective	Speech/Comp. Elective(s)	3
PHY 111	General Physics I	4
Elective	Arts/Human. Elective(s) 2	3
Elective	Soc. Sci. Elective(s) 1	3

Fourth Semester	(12 credits)
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CEM 222	Organic Chemistry II	4
PHY 122	General Physics II	4
Elective	Elective(s) to reach minimum 60 credits	1
Elective	Soc. Sci. Elective(s) 2	3

Minimum Credits Required for the Concentration or Option: 60

Minimum Credits Required for the Program: 60

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.

+See the MTA list to make course selections from any discipline except ECO.

++Transfer students should consider a course from the the EMU Diverse Word Requirements list.

Program Information Report

Computed Tomography (CT) (CPCTOM)

Post-Associate Certificate

Program Effective Term: Fall 2020

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.

Applying for Admission to the Program:

A formal application and acceptance to the program is required. Application packets may be downloaded from WCC's Student Connection, Health and Second Tier Program, information page <http://www.wccnet.edu/studentconnection/admissions/health-second-program/>. Completed and signed applications must be submitted during the dates indicated on the application to the Health and Second Tier Admissions Office in the Student Connection, located on the second floor of the Student Center Building.

WCC Radiography students who are currently enrolled in the final year of their program and expected to graduate in the Spring/Summer semester are given priority and may submit an incomplete program application during the application window. It is strongly recommended that WCC Radiography graduates schedule and sit for their ARRT Certification Examination within the two weeks following the completion of their program. Verification of all pending admission prerequisite requirements must be submitted within the deadline to be eligible to begin the program if accepted.

Requirement After Acceptance

Upon acceptance, students must purchase an account from a college-designated vendor to obtain a criminal background check and to track their health records. The criminal background check and health records must be submitted to the designated vendor. Specific information regarding the college-designated vendor, health records, and deadline dates will be provided at the mandatory orientation session.

Program Admission Requirements:

Washtenaw Community College uses a limited enrollment process for admission to this program. Each year, approximately 12 students are accepted to the program for a Fall semester start. There are multiple requirements that must be completed prior to submitting an application for admission. For detailed information regarding admission to this health care program, please visit our Health Care website at <http://health.wccnet.edu>

Prerequisite and program requirements along with WCC's point system and scales are reviewed annually and subject to change. Students are expected to meet the prerequisite and program requirements of the catalog term for the semester in which they first begin the program. Details regarding WCC's admissions process and to download the application can be found on WCC's Student Connection, Health and Second Tier Program, information page: <http://www.wccnet.edu/studentconnection/admissions/health-second-program/>.

Requirements for application are:

1. Admission to WCC.
2. Program prerequisite course:
 - a. Cross-sectional anatomy course from a JRCERT accredited college or hospital-based radiography program or RAD 223. Minimum grade of B-/2.7.
 3. Graduate of one (1) of the accredited programs below:
 - JRCERT
 - JRCNMT
 - Expected Spring/Summer graduate from WCC's Radiography program
 4. Current American Registry of Radiologic Technologists (ARRT) or Nuclear Medicine Technology Certification Board (NMTCB) registration card showing primary certification in one (1) of the following areas:
 - Radiography (R)
 - Nuclear Medicine (N)
 - Radiation Therapy (T)
 - Certified Nuclear Medicine Technologist (CNMT)
 - Expected Spring/Summer graduate from WCC's Radiography program
5. Minimum cumulative college GPA of 3.0.
6. Signed Abilities Statement. WCC reserves the right to request, before and during the program, that students successfully demonstrate specific physical and cognitive abilities related to the program.
7. Residency verification.

Continuing Eligibility Requirements:

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1. Additional criminal background checks may be conducted at any time during the program. Students may be required to have drug testing as well as additional criminal background checks and/or fingerprinting prior to the start of a clinical sequence as requested by specific clinical facilities. Any student found to have a positive drug screen for drugs prohibited by State of Michigan or Federal law (including marijuana) or controlled substances will be dismissed from the program. Failure to receive an acceptable criminal background/fingerprinting at any time, will result in dismissal from the program.
2. Students will be required to attend a hospital orientation session prior to starting their clinical rotation.
3. Students will be required to submit health records annually while in the program and must complete any other health requirements as designated by the clinical sites.
4. Students will be required to purchase special uniforms and supplies throughout the duration of the program.
5. 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 dismissal from the program.
6. All Computed Tomography (CT) courses must be completed with a minimum grade of C/2.0.
7. Students must have reliable transportation to clinical education sites, which may require a commute of up to one hour.
8. Students who are dismissed from the program may not be eligible to reapply to the program.

Semester 1 (Fall)		(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
Semester 2 (Winter)		(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

Program Information Report

Magnetic Resonance Imaging (MRI) (CPMRIP)

Post-Associate Certificate

Program Effective Term: Fall 2020

The Magnetic Resonance Imaging (MRI) Program is a post-associate advanced certificate program that is designed for registered radiologic technologists (ARRT), radiation therapists (ARRT), Sonographers (ARRT or ARDMS) and nuclear medicine technologists (ARRT or NMTCB). This program offers the didactic and clinical experience that will provide students with the knowledge, skills, and attitudes that are required to become an entry-level magnetic resonance imaging technologist. The curriculum is based on the recommended American Society of Radiologic Technology (ASRT) magnetic resonance imaging guidelines. Upon successful completion of the MRI program, students are eligible to take the ARRT post-primary certification examination in magnetic resonance imaging.

Applying for Admission to the Program:

A formal application and acceptance to the program is required. Application packets may be downloaded from WCC's Student Connection, Health and Second Tier Program, information page <http://www.wccnet.edu/studentconnection/admissions/health-second-program/> . Completed and signed applications must be submitted during the dates indicated on the application to the Health and Second Tier Admissions Office in the Student Connection, located on the second floor of the Student Center Building.

WCC Radiography students who are currently enrolled in the final year of their program and expected to graduate in the Spring/Summer semester are given priority and may submit an incomplete program application during the application window. It is strongly recommended that WCC Radiography graduates schedule and sit for their ARRT Certification Examination within the two weeks following the completion of their program. Verification of all pending admission prerequisite requirements must be submitted within the deadline to be eligible to begin the program if accepted.

Requirement After Acceptance

Upon acceptance, students must purchase an account from a college-designated vendor to obtain a criminal background check and to track their health records. The criminal background check and health records must be submitted to the designated vendor. Specific information regarding the college-designated vendor, health records, and deadline dates will be provided at the mandatory orientation session.

Program Admission Requirements:

Washtenaw Community College uses a limited enrollment process for admission to this program. Each year, approximately 12 students are accepted to the program for a Winter semester start. There are multiple requirements that must be completed prior to submitting an application for admission. For detailed information regarding admission to this health care program, please visit our Health Care website at <http://health.wccnet.edu>

Prerequisite and program requirements along with WCC's point system and scales are reviewed annually and subject to change. Students are expected to meet the prerequisite and program requirements of the catalog term for the semester in which they first begin the program. Details regarding WCC's admissions process and to download the application can be found on WCC's Student Connection, Health and Second Tier Program, information page: <http://www.wccnet.edu/studentconnection/admissions/health-second-program/> .

Requirements for application are:

1. Admission to WCC.
2. Program prerequisite course:
 - a. Cross-sectional anatomy course from a JRCERT accredited college or hospital-based radiography program or RAD 223. Minimum grade of B-/2.7.
 3. Graduate of one (1) of the accredited programs below:
 - JRCERT
 - JRCNMT
 - JRC-DMS
 - JRC-CVT
 - CAAHEP
 - Expected to graduate from WCC's Radiography program in the Spring/Summer semester
 4. Current American Registry of Radiologic Technologists (ARRT), American Registry for Diagnostic Medical Sonography (ARDMS) or Nuclear Medicine Technology Certification Board (NMTCB) registration card showing primary certification in one (1) of the following areas:
 - Radiography (R)
 - Sonography
 - Nuclear Medicine (N)
 - Radiation Therapy (T)
 - Expected to graduate from WCC's Radiography program in the Spring/Summer semester
5. Minimum cumulative college GPA of 3.0.
6. Signed Abilities Statement. WCC reserves the right to request, before and during the program, that students successfully

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demonstrate specific physical and cognitive abilities related to the program.

7. Residency verification.

Continuing Eligibility Requirements:

1. Additional criminal background checks may be conducted at any time during the program. Students may be required to have drug testing as well as additional criminal background checks and/or fingerprinting prior to the start of a clinical sequence as requested by specific clinical facilities. Any student found to have a positive drug screen for drugs prohibited by State of Michigan or Federal law (including marijuana) or controlled substances will be dismissed from the program. Failure to receive an acceptable criminal background/fingerprinting at any time, will result in dismissal from the program.

2. Students must complete any other health requirements as designated by the clinical sites.

3. All Magnetic Resonance Imaging (MRI) courses must be completed with a minimum grade of C/2.0.

4. Students will be required to attend a hospital orientation session prior to starting their clinical rotation.

5. Students will be required to purchase special uniforms and supplies throughout the duration of the program.

6. Students are required to demonstrate that they have maintained competency in all skills taught throughout their progression through the program.

7. Students must have reliable transportation to clinical education sites which may require a commute of up to one hour.

8. Students who are dismissed from the program may not be eligible to reapply to the program.

Semester 1 (Fall) (11 credits)

MRI 101	MRI Safety	2
MRI 110	MRI Physics I	3
MRI 120	MRI Procedures I	3
MRI 125	MRI Clinical Education I	3

Semester 2 (Winter) (10 credits)

MRI 130	MRI Physics II	3
MRI 135	MRI Quality Assurance	1
MRI 140	MRI Procedures II	3
MRI 145	MRI Clinical Education II	3

Semester 3 (Spring/Summer) (8 credits)

MRI 160	MRI Advanced Imaging Procedures	3
MRI 162	MRI Pulsed Sequence, Imaging Options, and Parameters	2
MRI 165	MRI Clinical Education III	3

Minimum Credits Required for the Program: 29

Program Information Report

Mammography (CPMAM)

Post-Associate Certificate

Program Effective Term: Fall 2020

High Demand Occupation High Skill Occupation High Wage Occupation

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.

Applying for Admission to the Program:

A formal application and acceptance to the program is required. Application packets may be downloaded from WCC's Student Connection, Health and Second Tier Program, information page <http://www.wccnet.edu/studentconnection/admissions/health-second-program/>. Completed and signed applications must be submitted during the dates indicated on the application to the Health and Second Tier Admissions Office in the Student Connection, located on the second floor of the Student Center Building.

Requirement After Acceptance

Upon notification of acceptance to the program, students must purchase an account for a college-designated vendor to obtain a criminal background check and to track their health records. The criminal background check and health records must be submitted to the designated vendor before attending the mandatory program orientation session. Specific information on the college-designated vendor will be included in the program acceptance letter.

Program Admission Requirements:

Washtenaw Community College uses a limited enrollment process for admission to this program. Each year, approximately 12 students are accepted to the program for a Winter semester start. There are multiple requirements that must be completed prior to submitting an application for admission. For detailed information regarding admission to this health care program, please visit our Health Care website at <http://health.wccnet.edu>.

Prerequisite and program requirements along with WCC's point system and scales are reviewed annually and subject to change. Students are expected to meet the prerequisite and program requirements of the catalog term for the semester in which they first begin the program. Details regarding WCC's admissions process and to download the application can be found on WCC's Student Connection, Health and Second Tier Program, information page: <http://www.wccnet.edu/studentconnection/admissions/health-second-program/>.

Requirements for application are:

1. Admission to WCC.
2. Graduate of a Joint Review Committee on Education in Radiologic Technology (JRCERT) accredited program.
3. Current American Registry of Radiologic Technologists (ARRT) registration card showing primary certification in radiography.
4. Minimum cumulative college GPA of 2.7.
5. Signed Abilities Statement. WCC reserves the right to request, before and during the program, that students successfully demonstrate specific physical and cognitive abilities related to this program.
6. Criminal background check clearance (refer to the Information Release Authorization form in the admission packet).
7. Residency verification.

Continuing Eligibility Requirements:

1. Additional criminal background checks may be conducted at any time during the program. Students may be required to have drug testing as well as 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 drug test and/or criminal background/fingerprinting check at any time, will result in dismissal from the program.
2. Students must complete any other health requirements as designated by the clinical sites.
3. All Mammography (RAD) courses must be completed with a minimum grade of C/2.0.
4. Students who are dismissed from the program may not be eligible to reapply to the program.

Semester 1 (Fall)

(9 credits)

RAD 270	Principles of Mammography	3
RAD 271	Mammography Quality Control (QC)	3
RAD 273	Mammography Clinical Education	3

Minimum Credits Required for the Program:

9

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General Studies (AGGSD)**Associate in General Studies**Program Effective Term: **Fall 2020****Program is also available online**

This degree is designed for students who wish to earn an associate degree by creating a personalized program. It offers two pathways for completion: a pathway to four-year transfer or a pathway to employment in their chosen career. Students will design this 60 credit, multi-disciplinary program in conjunction with an academic advisor and can include coursework from all areas of the college; occupational and academic.

Minimum Option Credits Required for the Program:**60****General Studies Options****Employment Pathway (60 credits)****First Semester (15 credits)**

Elective	Writing Elective(s)	3-4
Elective	Math Elective(s)	3
	Concentration 1	3
	Concentration 2	3
Elective	Elective(s)	3

Second Semester (15 credits)

Elective	Speech/Comp. Elective(s)	3
Elective	Arts/Human. Elective(s)	3
	Concentration 3	3
Elective	Elective(s)	3
Elective	Elective(s)	3

Third Semester (15 credits)

Elective	Nat. Sci. Elective(s)	3-4
	Concentration 4	3
	Concentration 5	3
Elective	Elective(s)	3
Elective	Elective(s)	3

Fourth Semester (15 credits)

Elective	Soc. Sci. Elective(s)	3
	Concentration 6	3
Elective	Elective(s)	3
Elective	Elective(s)	3
Elective	Electives to reach a minimum of 60 credits	3

Minimum Credits Required for the Concentration or Option: 60**Transfer Pathway (60 credits)****First Semester (15 credits)**

Elective	Writing Elective(s)	3-4
Elective	Math Elective(s)	3
	Concentration 1	3
	Concentration 2	3
Elective	Elective(s)	3

Second Semester (15 credits)

Elective	Speech/Comp. Elective(s)	3
Elective	Nat. Sci. Elective(s)	3
Elective	Arts/Human. Elective(s)	3
	Concentration 3	3
Elective	Elective(s)	3

Third Semester (15 credits)

Elective	Nat. Sci. Lab Elective(s)	3-4
Elective	Soc. Sci. Elective(s) 1	3

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	Concentration 4	3
	Concentration 5	3
Elective	Elective(s)	3
Fourth Semester		(15 credits)
Elective	Soc. Sci. Elective(s) 2	3
Elective	Arts/Human. Elective(s) 2	3
	Concentration 6	3
Elective	General Education electives to reach a minimum of 30 credit hours as needed	3
Elective	Electives to reach a minimum of 60 credits (0-3 credits)	3

Minimum Credits Required for the Concentration or Option: 60

Minimum Credits Required for the Program: 60

Program Information Report

Human Services, Pre-Education & Public Safety

Child Development (CTCDA)**Certificate****Program Effective Term:** Fall 2020**High Demand Occupation**

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		(10 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
	Optional (not required): CCP 124*	

Minimum Credits Required for the Program:**10****Notes:**

**This additional course is 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.*

Program Information Report

Police Academy (CTPA) Certificate

Program Effective Term: Fall 2020

High Demand Occupation High Skill Occupation High Wage Occupation

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: <http://mi.gov/mcoles>

Applying for Admission to the Program:

Students must have a minimum of 45 college credits prior to admission to the Police Academy. Students are admitted to the program based on the priorities established by the Michigan Commission on Law Enforcement Standards (MCOLES).

Major/Area Requirements		(19 credits)
CJT 229A	Law Enforcement Training Part I	12
CJT 229B	Law Enforcement Training Part II	7

Minimum Credits Required for the Program:

19

Program Information Report

Child Development (APCD)

Associate in Applied Science Degree

Program Effective Term: Fall 2020

High Demand Occupation

The Child Development Associate Degree program prepares students to be childhood education professionals. The coursework and practica prepare students to work effectively with young children and families in a variety of settings. The program satisfies Michigan state requirements for licensing as directors of child care centers, lead teachers in child care centers, home-based center providers, and support staff in public school early childhood programs and Head Start agencies. It also prepares students to transfer into a bachelor's degree program.

Articulation:

Eastern Michigan University, BS degree;
 Ferris State 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/curriculum/articulation/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		(15 credits)
CCP 101	Child Development	3
CCP 122	Essentials of Early Care and Education - I	4
CCP 132	Child Development Practicum I	1
ENG 111	Composition I	4
Elective	Nat. Sci. Elective(s)	3
Second Semester		(14 credits)
CCP 123	Essentials of Early Care and Education - II	4
CCP 133	Child Development Practicum II	1
Elective	Select one course: CCP 209, CCP 211, CCP 220 or CCP 225	3
Elective	Soc. Sci. Elective(s)*	3
COM 101 or	Fundamentals of Speaking	
COM 102 or	Interpersonal Communication	
COM 200	Family Communication	3
Third Semester		(16 credits)
CCP 200	Working with Families in a Diverse Society	3
CCP 210	Child Guidance and Classroom Management	3
CCP 230	Child Observation and Assessment	3
Elective	Select one course: CCP 209, CCP 211, CCP 220 or CCP 225	3
MTH 148 or	Functional Math for Elementary Teachers I	
	Any MTA MTH class	4
Fourth Semester		(15 credits)
CCP 218	Advanced Child Care Seminar	1
CCP 219	Advanced Child Care Practicum	2
CCP 251	Education of the Young Child with Exceptionalities	3
Elective	Select one course: CCP 209, CCP 211, CCP 220 or CCP 225	3
ENG 240 or	Children's Literature	
ENG 242	Diverse Children's Literature**	3
Elective	Select any course to reach a minimum of 60 credits.	3

Minimum Credits Required for the Program:

60

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Notes:

**Students are encouraged to select PSY 100 or SOC 100 for their social science elective.*

***Transfer students should consider a course from the EMU Diverse World Requirement List.*

Program Information Report

Criminal Justice - Law Enforcement (APCJLE)

Associate in Applied Science Degree

Program Effective Term: Fall 2020

High Demand Occupation High Skill Occupation High Wage Occupation

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.

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/curriculum/articulation/levelone/colleges/>.

Continuing Eligibility Requirements:

-Admission to the Police Academy component of this program (CJT 229A and CJT 229B) is based on passing reading, writing, and physical activity examinations as well as fingerprinting and criminal history checks. Students are admitted to the program based on the priorities established by the Michigan Commission on Law Enforcement Standards (MCOLES).

-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		(13.5 credits)
CJT 100	Introduction to Criminal Justice	3
ENG 100 or ENG 111	Introduction to Technical and Workplace Writing Composition I	4
	Arts/Human. Elective(s)	3
	Math Elective(s)	3
PEA 115	Health and Fitness Experience	.5
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		(12.5 credits)
CJT 170	Domestic and International Terrorism	3
CJT 224	Criminal Investigation	3
ANT 265	Introduction to Forensic Anthropology	3
PEA 115	Health and Fitness Experience	.5
PSY 100 or PSY 200	Introduction to Psychology Child Psychology	3
Fourth Semester		(19 credits)
CJT 229A	Law Enforcement Training Part I	12
CJT 229B	Law Enforcement Training Part II	7
Minimum Credits Required for the Program:		60

Notes:

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

Program Information Report

Occupational Studies (APOST)

Associate in Applied Science Degree

Program Effective Term: **Fall 2020**

High Demand Occupation High Skill Occupation High Wage Occupation

Program is also available online

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. 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.

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

General Studies Program Requirements	(60 credits)
Complete the General Education Requirements for the Associate in Applied Science Degree:	18
Writing/Composition (3)	
Second Writing/Composition or Communication (3)	
Math (3)	
Natural Sciences (3)	
Social and Behavioral Science (3)	
Arts and Humanities (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	22
Minimum Credits Required for the Program:	60

Program Information Report

Criminal Justice (AACJ)

Associate in Arts Degree

Program Effective Term: Fall 2020

High Demand Occupation High Skill Occupation High Wage Occupation

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:

Eastern Michigan University, BA degree and several BS degrees*;
Madonna University, BS degree.

*For those interested in pursuing a degree in Criminology and Criminal Justice from EMU, students may take 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/curriculum/articulation/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 or	Police/Community Relations	3
CJT 156	Everyday Law	3-4
COM 102	Interpersonal Communication	3
ENG 111	Composition I	4
Elective	Nat. Sci. Elective(s)	3
Second Semester		(16 credits)
CJT 120	Criminal Justice Ethics	3
CJT 160	Criminal Justice Constitutional Law	3
CJT 209	Criminal Law	3
ENG 226	Composition II	3
MTH 160	Basic Statistics	4
Third Semester		(13 credits)
CJT 208	Criminal Evidence and Procedure	3
CJT 223	Juvenile Justice	3
PSY 100	Introduction to Psychology	3
Elective	Nat. Sci. Lab Elective(s)	3
	Elective(s) (0-1 credits) to reach minimum 60 credits	1
Fourth Semester		(15 credits)
ANT 201	Introduction to Cultural Anthropology	3
CJT 144 or	Parole, Probation, and Community Corrections	3
CJT 170	Domestic and International Terrorism	3
CJT 224	Criminal Investigation	3
SOC 100	Principles of Sociology	3
Elective	Arts/Human. Elective(s) 2 Not COM	3

Minimum Credits Required for the Program: 60

Program Information Report

Early Childhood Education (AAECED)

Associate in Arts Degree

Program Effective Term: Fall 2020

High Demand Occupation High Skill Occupation

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.

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/curriculum/articulation/levelone/colleges/>.

Program Admission Requirements:

Academic Math Level of 3 is required to enroll in required math course. If remedial math course is needed, it is suggested student take during the first semester.

Continuing Eligibility Requirements:

GPA of 2.0 or higher

First Semester	(16 credits)
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CCP 101	Child Development	3
COM 101	Fundamentals of Speaking	3
ENG 111	Composition I	4
GEO 101	World Regional Geography	3
HST 201	United States History to 1877	3

Second Semester	(16 credits)
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CCP 220	Development and Care of Infants and Toddlers	3
ENG 226	Composition II	3
ENG 240	Children's Literature	3
	Elective(s) to reach a minimum 60 credits*	4
MTH 125 or	Everyday College Math	
MTH 176 or	College Algebra	
	Any Math Level 4 or higher course	3

Third Semester	(15 credits)
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CCP 200	Working with Families in a Diverse Society	3
ENG 242	Diverse Children's Literature	3
GLG 202	Earth Science for Elementary Teachers	4
HSC 131	CPR/AED and First Aid	1
PSY 220	Human Development and Learning	4

Fourth Semester	(13 credits)
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CCP 204	The Developing Professional in Early Childhood Education**	2
CCP 205	Practicum for the Developing ECE Professional***	1
CCP 251	Education of the Young Child with Exceptionalities	3
HST 200	Michigan History	3
PHY 100	Physics for Elementary Teachers	4

Minimum Credits Required for the Program: 60

Notes:

*Additional suggested general education electives: COM 102, COM 225, MTH 148, MTH 149 or PLS 112

Additional suggested CCP electives: CCP 211 or CCP 209.

Students must request course substitution(s) from program or division advisor.

**CCP 122 and CCP 123 may be substituted for CCP 204.

***CCP 132 and CCP 133 may be substituted for CCP 205.

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Program Information Report

Elementary Education (AAELEM)

Associate in Arts Degree

Program Effective Term: Fall 2020

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:

Eastern Michigan University, BS degree.

This program meets MTA. Students must have their transcripts certified for MTA 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/curriculum/articulation/levelone/colleges/>.

Program Admission Requirements:

Students must have an Academic Math Level of 3 to enroll in MTH 148. At least two years 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		(14 credits)
ENG 111	Composition I	4
GEO 101	World Regional Geography	3
MTH 148	Functional Math for Elementary Teachers I	4
PLS 112	Introduction to American Government	3
Second Semester		(17 credits)
	Speech/Comp. Elective(s)	3
GLG 202	Earth Science for Elementary Teachers	4
MTH 149	Functional Math for Elementary Teachers II	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
Elective	Arts/Human. Elective(s) 2 Not ENG	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		(14 credits)
HST 201	United States History to 1877	3
Elective	Math Elective(s)	3
PHY 100	Physics for Elementary Teachers	4
PSY 220	Human Development and Learning	4

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**Human Services (AAHUST)****Associate in Arts Degree****Program Effective Term: Fall 2020****High Demand Occupation High Skill Occupation High Wage Occupation**

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:

Concordia University - Ann Arbor, BSW degree;
Eastern Michigan University, BSW degree*;
Madonna University, BSW degree.

*Students should meet with an EMU Department of Social Work advisor before applying for admission to EMU's program.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site:
<http://www.wccnet.edu/curriculum/articulation/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 prerequisite courses 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		(14 credits)
ENG 111	Composition I	4
HSW 100	Introduction to Human Services	3
SOC 100	Principles of Sociology	3
	Any science course with a lab.#	4

Second Semester		(16 credits)
HSW 200	Interviewing and Assessment	3
PSY 100	Introduction to Psychology	3
SOC 205	Race and Ethnic Relations	3
SOC 220	Group Dynamics and Counseling	3
	Restricted Math Elective(s)*	4

Third Semester		(17 credits)
HSW 229	Human Services Success Skills	1
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. Elective(s)**	3

Fourth Semester		(13 credits)
	Arts/Human. Elective(s)***	3
	Nat. Sci. Elective(s) 2	3
COM 101 or	Fundamentals of Speaking	3
COM 102	Interpersonal Communication	3
HSW 230	Field Internship and Seminar I	3
	Elective(s) to reach a minimum 60 credits	1

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

Notes:

#Consult with a program advisor if transferring to any institution other than EMU.

*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, DRA 180, ENG 181, ENG 213, ENG 214, ENG 224 or ENG 242, HUM 150, HUM 175, HUM 221, MUS 180.

***Select another course in a different discipline from the Humanities section of the MTA list. 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.

Program Information Report

Paralegal Studies/Pre-Law (AAPSPL)

Associate in Arts Degree

Program Effective Term: Fall 2020

This program prepares students for entry-level positions or further study in the field of law. Entry-level paralegal positions are available in legal offices such as corporate, prosecuting and public defense in addition to some courts. Under the supervision of an attorney, paralegals may assist with research, court filings, documentation and depositions. Students who wish to continue their education may continue on to a bachelor's degree or a Juris Doctorate 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/curriculum/articulation/levelone/colleges/>.

First Semester		(17 credits)
CJT 130	Introduction to Paralegal Studies	3
CJT 156	Everyday Law	4
COM 102	Interpersonal Communication	3
ENG 111	Composition I	4
	Nat. Sci. Elective(s)	3
Second Semester		(15 credits)
BOS 206	Personal Management Application and Internet Resources	2
CJT 120	Criminal Justice Ethics	3
ENG 226	Composition II	3
MTH 160	Basic Statistics	4
SOC 100	Principles of Sociology	3
Third Semester		(14 credits)
ACC 111	Principles of Accounting I	3
CJT 160	Criminal Justice Constitutional Law	3
HST 200	Michigan History	3
	Nat. Sci. Lab Elective(s)*	3
	General Education Elective(s) (0-1 credits) to reach a minimum 30 General Education Credits	1
	Elective(s) to reach minimum 60 credits	1
Fourth Semester		(15 credits)
BMG 111	Business Law I	3
CJT 208	Criminal Evidence and Procedure	3
CJT 209	Criminal Law	3
MUS 147	Arts, Media and Entertainment Law	3
PHL 250	Logic	3

Minimum Credits Required for the Program: 61

Notes:

*Students wishing to transfer to EMU should follow the articulation guide.

Program Information Report

Secondary Education (AASECO)

Associate in Arts Degree

Program Effective Term: Fall 2020

Program is also available online

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, BA or 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/curriculum/articulation/levelone/colleges/>.

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
ENG 181 or ENG 214 or ENG 242	African-American Literature Literature of the Non-Western World Diverse Children's Literature	 3 3
	Nat. Sci. Elective(s)	3
	Complete a minimum of 3 credits in your major or minor area.*	3
Second Semester		(12 credits)
	Arts/Human. Elective(s)**	3
	Math Elective(s)	3
PSY 100	Introduction to Psychology	3
	Complete a minimum of 3 credits in a major or minor area.*	3
Third Semester		(16 credits)
PSY 251	Education of Exceptional Children	3
	Nat. Sci. Lab Elective(s)	4
	Complete a minimum of 9 credits in major or minor area.*	9
Fourth Semester		(16 credits)
PSY 220	Human Development and Learning	4
	Social and Behavioral Science Restricted Elective: Choose one HST 121, HST 122, HST 123, HST 201 or HST 202	3
	Complete a minimum of 6 credits in a major or minor area.*	6
	Elective(s) to reach a minimum 60 credits.	3
Minimum Credits Required for the Program:		60

Notes:

A course counted for general education or program requirements may not also be counted for a major/minor area.

*See an advisor to select courses that will meet the requirements of the college to which you are transferring.

**Students following the Michigan Transfer Agreement (MTA) should select their second Arts and Humanities course from any on the approved MTA list except ENG, GDT 101 and PHO 103.

Program Information Report

Addiction Studies (CPAS)

Post-Associate Certificate

Program Effective Term: Fall 2020

Program is also available online

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.*

Program Information Report

General Studies (AGGSD)**Associate in General Studies**Program Effective Term: **Fall 2020****Program is also available online**

This degree is designed for students who wish to earn an associate degree by creating a personalized program. It offers two pathways for completion: a pathway to four-year transfer or a pathway to employment in their chosen career. Students will design this 60 credit, multi-disciplinary program in conjunction with an academic advisor and can include coursework from all areas of the college; occupational and academic.

Minimum Option Credits Required for the Program:**60****General Studies Options****Employment Pathway (60 credits)****First Semester (15 credits)**

Elective	Writing Elective(s)	3-4
Elective	Math Elective(s)	3
	Concentration 1	3
	Concentration 2	3
Elective	Elective(s)	3

Second Semester (15 credits)

Elective	Speech/Comp. Elective(s)	3
Elective	Arts/Human. Elective(s)	3
	Concentration 3	3
Elective	Elective(s)	3
Elective	Elective(s)	3

Third Semester (15 credits)

Elective	Nat. Sci. Elective(s)	3-4
	Concentration 4	3
	Concentration 5	3
Elective	Elective(s)	3
Elective	Elective(s)	3

Fourth Semester (15 credits)

Elective	Soc. Sci. Elective(s)	3
	Concentration 6	3
Elective	Elective(s)	3
Elective	Elective(s)	3
Elective	Electives to reach a minimum of 60 credits	3

Minimum Credits Required for the Concentration or Option: 60**Transfer Pathway (60 credits)****First Semester (15 credits)**

Elective	Writing Elective(s)	3-4
Elective	Math Elective(s)	3
	Concentration 1	3
	Concentration 2	3
Elective	Elective(s)	3

Second Semester (15 credits)

Elective	Speech/Comp. Elective(s)	3
Elective	Nat. Sci. Elective(s)	3
Elective	Arts/Human. Elective(s)	3
	Concentration 3	3
Elective	Elective(s)	3

Third Semester (15 credits)

Elective	Nat. Sci. Lab Elective(s)	3-4
Elective	Soc. Sci. Elective(s) 1	3

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Program Information Report

	Concentration 4	3
	Concentration 5	3
Elective	Elective(s)	3
Fourth Semester		(15 credits)
Elective	Soc. Sci. Elective(s) 2	3
Elective	Arts/Human. Elective(s) 2	3
	Concentration 6	3
Elective	General Education electives to reach a minimum of 30 credit hours as needed	3
Elective	Electives to reach a minimum of 60 credits (0-3 credits)	3

Minimum Credits Required for the Concentration or Option: 60

Minimum Credits Required for the Program: 60

Program Information Report

Manufacturing & Automotive

Introduction to Manufacturing Processes (CCMETI)

Certificate of Completion

Program Effective Term: Fall 2020

In this program, students (including dual-enrolled high school students) interested in exploring the manufacturing industry will learn fundamentals in manufacturing including blueprint reading, 3D modeling systems and output files used to control manufacturing systems. Part manufacturing processes including measurement, safety, machining at mills, lathes and saws will be introduced. In these entry-level courses, students will learn setup and operation procedures at CNC computerized mills and lathes, control of process at CNC mills and lathes to produced quality parts as well as fundamentals for writing programs.

Major/Area Requirements		(8 credits)
MEC 101	Blueprint Reading for Manufacturing	2
MTT 102	Machining for the Technologies	2
NCT 101	Introduction to Computerized Machining (CNC) - I	2
NCT 110	Introduction to Computerized Machining (CNC) - II	2

Minimum Credits Required for the Program:

8

Program Information Report

Auto Body Repair (CTAUBR) Certificate

Program Effective Term: Fall 2020

High Demand Occupation High Wage Occupation

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/curriculum/articulation/levelone/colleges/>.

Major/Area Requirements		(20 credits)
ABR 111	Introduction to Auto Body Repair	4
ABR 112	Introduction to Automotive Refinishing	4
ABR 113	Estimating and Shop Operations	4
ABR 123	Technical Auto Body Repair	4
ABR 124	Technical Automotive Refinishing	4

Required Support Courses		(10 credits)
Elective	Take an additional 10 credits from the list below:	
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

Program Information Report

Automotive Services Technician (CTASVT)

Certificate

Program Effective Term: Fall 2020

High Demand Occupation High Skill Occupation High Wage Occupation

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/curriculum/articulation/levelone/colleges/>.

Major/Area Requirements		(30 credits)
ASV 130	Automotive Maintenance	4
ASV 131	Automotive Electrical	4
ASV 132	Automotive Engines	4
ASV 133	Automotive Fuel Systems	4
ASV 134	Automotive Transmissions	4
ASV 254	Suspension and Steering	2
ASV 255	Brakes	2
ASV 256	Electrical and Electronic Systems	4
	Restricted Electives select 2 or more credits: ABR 111, ABR 114, ASV 174, ASV 269, ASV 270, ASV 277, ASV 279, CST 185, MST 110, MTT 102, or WAF 105	2

Minimum Credits Required for the Program:

30

Program Information Report

Fluid Power (CTFPOW)

Certificate

Program Effective Term: Fall 2020

High Skill Occupation High Wage Occupation

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 who complete the program may choose 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/curriculum/articulation/levelone/colleges/>.

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

Core Courses		(11 credits)
MEC 100	Materials and Processes	3
FLP 101	Fluid Power Fundamentals - I	2
MTT 102	Machining for the Technologies	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.

Minimum Credits Required for the Program: 23

Notes:

This certificate can also lead to an associate degree in Mechatronics.

Program Information Report

Industrial Electronics Technology (CFIET)

Certificate

Program Effective Term: Fall 2020

High Demand Occupation High Skill Occupation High Wage Occupation

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/curriculum/articulation/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	Programmable Controllers (PLCs) I	4
ELE 254	Programmable Controllers (PLCs) II	4

Minimum Credits Required for the Program:

16

Program Information Report

Machine Tool Programming (CNC) (CTMTP)

Certificate

Program Effective Term: Fall 2020

In this program, students will learn to write, read, and edit programs for CNC machine tools. They will understand core canned cycles for milling and turning operations on CNC machine tools and have the skills to do 2D and 3D modeling and posting of CNC code using CAD/CAM software. Students completing this certificate will be able to create, edit, and debug code for local manufacturing companies.

Program Admission Requirements:

Completion of Machine Tool Setup and Operations certificate or comparable course or work experience. Academic Math Level 4 is required for NCT 121 and NCT 221.

Major/Area Requirements		(12 credits)
NCT 120	Introduction to 2D CAD CAM Programming and Applications	2
NCT 121	Manual Programming and NC Tool Operation	4
NCT 123	2D CAD CAM CNC Programming for Mills and Lathes	2
NCT 221	Advanced Manual Programming and NC Tool Operation	4

Minimum Credits Required for the Program:

12

Program Information Report

Machine Tool Setup and Operation (CTMTSO) Certificate

Program Effective Term: Fall 2020

In this program, students learn to setup and operate CNC machine tools, traditional mills, lathes, and saws. They learn how to use basic measurement tools and read blueprints. This certificate will highlight the fundamentals of materials and processes including mechanical and physical testing and heat treatment of ferrous and non-ferrous metals. Students completing this certificate will be able to perform many of the fundamental tasks within a fabrication shop, including simple part manufacturing, set-up and operation of CNC machine tools as well as inspection using simple measurement tools.

Major/Area Requirements		(17 credits)
MEC 100	Materials and Processes	3
MEC 101	Blueprint Reading for Manufacturing	2
MEC 201	Mechanisms	2
MTT 102	Machining for the Technologies	2
MTT 111	Machine Shop Theory and Practice	4
NCT 101	Introduction to Computerized Machining (CNC) - I	2
NCT 110	Introduction to Computerized Machining (CNC) - II	2

Minimum Credits Required for the Program: 17

Program Information Report

Motorcycle Service Technology I (CTMST1)

Certificate

Program Effective Term: Fall 2020

High Skill Occupation

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 the Technologies	2
WAF 105	Introduction to Welding Processes	2

Minimum Credits Required for the Program: 20

Program Information Report

Welding and Fabrication Principles (CTWLDS)

Certificate

Program Effective Term: Fall 2020

High Demand Occupation High Wage Occupation

This certificate introduces students to safe welding and cutting practices and principles including, proper technique and position, weld quality requirements, destructive and non-destructive testing and examination methods, print reading and interpretation of welding symbols as well as basic metal fabrication. Students will use the foundation and working knowledge to weld in all processes, perform repair techniques using thermal cutting and gouging, apply the requirements to executive quality welds and apply CNC programming language that can be used to produce parts that can be assembled and welded. This certificate serves as a fundamental pathway into the Welding and Fabrication Advanced Applications certificate and Welding Technology degree. Students who successfully complete this certificate will have learned the skills sought by the workforce as an entry-level welder and fabricator.

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/curriculum/articulation/levelone/colleges/>.

Major/Area Requirements		(24 credits)
NCT 120	Introduction to 2D CAD CAM Programming and Applications	2
WAF 106	Welding Print Reading	3
WAF 109	Welding Safety and OSHA Regulations	2
WAF 125	Introduction to Welding Processes I	2
WAF 126	Introduction to Welding Processes II	2
WAF 130	Shielded Metal Arc Welding (SMAW)	4
WAF 131	Thermal Cutting, Gouging and Weld Repair	3
WAF 139	Basic Metal Fabrication	3
WAF 140	Inspection and Testing	3

Minimum Credits Required for the Program: 24

Program Information Report

Advanced Automotive Services Technician (CVASV2)

Advanced Certificate

Program Effective Term: Fall 2020

This advanced certificate builds on the electrical and mechanical skills developed in the Automotive Services Technician (CTASVT) certificate. This advanced certificate prepares students for employment as a certified automotive technician. The program also prepares the student for the State of Michigan certification exams. Using specialized electrical diagnostic equipment students will diagnose and repair vehicle systems such as Automotive Engines, Automatic and Manual Transmissions, Automotive HVAC systems and Powertrain Drivability systems.

Program Admission Requirements:

Academic Reading and Writing Levels of 6, Academic Math Level 3, and completion of the Automotive Services Technician (CTASVT) certificate

Major/Area Requirements		(13 credits)
ASV 135	Facility Operations	3
ASV 251	Engine Diagnosis and Repair	2
ASV 257	Heating and Air Conditioning Systems	2
ASV 258	Engine Drivability	2
ASV 266	Advanced Transmissions	2
	Restricted Elective(s): ABR 140 or WAF 103	2

Minimum Credits Required for the Program:

13

Program Information Report

Advanced Machine Tool Programming (CVMTPA)

Advanced Certificate

Program Effective Term: Fall 2020

In this program, students will learn advanced CNC programming skills. Students will practice the fundamentals of Intuitive Probing Systems (IPS) and Visual Quick Code (VQC) needed to create machine tool programs. Starting with 2D and 3D CAM programming and advancing to 4th and 5th axis machining, students will learn the proper methods for creating tool paths.

Program Admission Requirements:

Completion of the Machine Tool Programming (CNC) certificate.

Major/Area Requirements		(16 credits)
MEC 120	3D-Printing: Machine, Process and Innovation	4
NCT 255	Probes, Macros and Conversational Programming for CNC	4
NCT 259	MasterCam 2D and 3D CAM CNC Programming for Mills	4
NCT 269	4 and 5 Axis Machining for the CNC Vertical Mills	4

Minimum Credits Required for the Program:

16

Program Information Report

Custom Auto Body Fabrication and Chassis Design (CVABFC)

Advanced Certificate

Program Effective Term: Fall 2020

High Demand Occupation High Wage Occupation

The Custom Auto Body Fabrication and Chassis Design certificate focuses on advanced body and paint techniques used to customize automobiles and turn them into "rolling showpieces." Students will expand on knowledge acquired in the Auto Body Repair program. Working in teams, students will build, complete and show a project vehicle. Students will learn advanced sheet metal fabrication and construction of a custom automobile chassis. Areas of study will include various types of building materials and their uses, measurement, pattern development, mechanical drawing, fastener selection, MIG and TIG welding and frame design and suspension types. Other topics such as candies, pearls, tri-stage paint jobs and the application of custom graphics will be discussed. Upon acquiring this advanced certificate, employment possibilities may include specialty shop technician, custom paint technician and metal fabricator/welder.

Major/Area Requirements		(16 credits)
CCC 210	Custom Auto Body Technician I	4
CCC 215	Custom Fabrication and Chassis Design I	4
CCC 250	Custom Auto Body Technician II	4
CCC 255	Custom Fabrication and Chassis Design II	4

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

Program Information Report

Industrial Electronics Technology II (CVIET2)

Advanced Certificate

Program Effective Term: Fall 2020

High Demand Occupation High Skill Occupation High Wage Occupation

This program builds on the foundation of electricity and electronic control introduced in the Industrial Electronics Technology (CFIET) certificate, providing advanced instruction in the areas of industrial automation and electrical standards. Students will learn to apply, control and troubleshoot electric motors, relate their understanding of electricity and controls to the requirements of the National Electrical Code, and pursue other learning critical to industrial automation such as fluid power motion control and digital networks.

Articulation:

Eastern Michigan University, 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/curriculum/articulation/levelone/colleges/>.

Program Admission Requirements:

Successful completion of the Industrial Electronics Technology certificate, appropriate prerequisite courses, or equivalent experience.

Major/Area Requirements		(16 credits)
ELE 134	Motors and Controls	4
ELE 204	National Electrical Code	4
	Select a minimum of 8 credit hours of restricted electives including CST 185, FLP 225 and/or another ELE or FLP course.*	8

Minimum Credits Required for the Program: 16

Notes:

**Students may select alternative electives with the permission of department faculty.*

Program Information Report

Motorcycle Service Technology II (CVMST2)

Advanced Certificate

Program Effective Term: Fall 2020

High Skill Occupation

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

Program Information Report

Welding and Fabrication Advanced Applications (CVWLDN)

Advanced Certificate

Program Effective Term: **Fall 2020**

High Demand Occupation High Wage Occupation

This advanced certificate combines welding fundamentals with more complex welding, cutting and fabrication techniques and applications aimed to further develop one's skills and core competencies. Students focus on welding using processes and positions common in industry, perform destructive and non-destructive testing, identify weld failures and perform root cause analysis, executive repair techniques, perform advanced fabrication techniques and execute automated welding and cutting programming and operations. Students who successfully complete this advanced certificate will have learned a broad range of essential skillsets critical to the trade and how to apply those skills to manufacturing, automotive, construction, aerospace, oil, military industry, gas and power industries.

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/curriculum/articulation/levelone/colleges/>.

Program Admission Requirements:

Successful completion of the Welding and Fabrication Principles Certificate (CTWLDS).

Continuing Eligibility Requirements:

WAF 233 and WAF 239 require a Math Level 2.

Major/Area Requirements		(24 credits)
WAF 150	Automated Welding and Cutting	3
WAF 210	Welding Metallurgy	3
WAF 230	Advanced Shielded Metal Arc Welding (SMAW)	4
WAF 231	Gas Tungsten Arc Welding (GTAW)	4
WAF 232	Semi-Automatic Welding Processes	4
WAF 233	Submerged Arc and Flux Core Arc Welding	3
WAF 239	Advanced Metal Fabrication	3

Minimum Credits Required for the Program:

24

Program Information Report

Automotive Test Technician (APATT)

Associate in Applied Science Degree

Program Effective Term: Fall 2020

In this program, students will be introduced to the test and data acquisition processes used in automotive testing. Students will learn to assemble and disassemble components for automotive testing. Diagnosis, maintenance and proper operation of complex data acquisition equipment are essential. Students will learn to monitor and calibrate testing instruments. Job possibilities include working in a crash lab or other testing facility.

First Semester		(15 credits)
ASV 131	Automotive Electrical	4
ASV 132	Automotive Engines	4
MTT 102	Machining for the Technologies	2
	Restricted Electives select a minimum of 2 credits: ABR 114 or WAF 105	2
Elective	Writing Elective(s)	3
Second Semester		(15 credits)
ASV 256	Electrical and Electronic Systems	4
CST 185	Local and Mobile Networking Essentials	4
	Restricted Electives select a minimum of 4 credits: ABR 111, ABR 140, ASV 174, ASV 251, ASV 257, ASV 269, ASV 279, MST 110, MTT 102, or WAF 103	4
Elective	Arts/Human. Elective(s)	3
Third Semester		(13 credits)
ASV 277	Automotive Powertrain Systems	4
Elective	Math Elective(s)	3
Elective	Speech/Comp. Elective(s)	3
Elective	Nat. Sci. Elective(s)	3
Fourth Semester		(17 credits)
ABR 201	Lightweighting Composite Repair	4
ASV 270	Automotive Test and Development	4
	Restricted Electives to reach minimum 60 credits: ABR 111, ABR 140, ASV 174, ASV 251, ASV 257, ASV 269, ASV 279, MST 110, MST 220, MTT 102, WAF 103	6
Elective	Soc. Sci. Elective(s)	3
Minimum Credits Required for the Program:		60

Notes:

*Students may elect to take optional courses in Semester 5 to meet MTA. Please refer to the WCC MTA Transfer Agreement web page for more information: <http://www.wccnet.edu/services/transferresources/mta/>

Program Information Report

Engineering Technologist-Manufacturing (APETEC)

Associate in Applied Science Degree

Program Effective Term: Fall 2020

Students in this program will demonstrate proficiency in the operation of various types of automated design/machine tool equipment. Competencies in design, programming, and materials and machine processing will be developed. In addition, students will hone skills in the manufacturing and troubleshooting of mechanical parts and the setup and operations of advanced manufacturing systems. Students will apply problem-solving skills learned in the program to create innovative solutions for real-world manufacturing challenges in preparation for entry-level Engineering Technologist or Technician positions.

Program Admission Requirements:

College level reading and writing levels of 6 and math level 4 are required.

First Semester (13 credits)

MEC 100	Materials and Processes	3
MEC 101	Blueprint Reading for Manufacturing	2
MTT 102	Machining for the Technologies	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

Second Semester (16 credits)

COM 101	Fundamentals of Speaking	3
MTH 178	General Trigonometry*	3
MTT 111	Machine Shop Theory and Practice	4
NCT 120	Introduction to 2D CAD CAM Programming and Applications	2
NCT 121	Manual Programming and NC Tool Operation	4

Third Semester (13 credits)

ART 150	Monuments and Cultures	3
NCT 123	2D CAD CAM CNC Programming for Mills and Lathes	2
NCT 221	Advanced Manual Programming and NC Tool Operation	4
PHY 111	General Physics I	4

Fourth Semester (11 credits)

ECO 110	Introduction to Economics	3
NCT 255	Probes, Macros and Conversational Programming for CNC	4
NCT 259	MasterCam 2D and 3D CAM CNC Programming for Mills	4

Fifth Semester (11 credits)

ENG 107	Technical Writing Fundamentals	3
MEC 120	3D-Printing: Machine, Process and Innovation	4
NCT 269	4 and 5 Axis Machining for the CNC Vertical Mills	4

Minimum Credits Required for the Program: 64

Notes:

*MTH 178 requires academic math level 5.

**Students may elect to take optional courses to meet MTA. Please refer to the WCC MTA Transfer Agreement web page <http://www.wccnet.edu/services/transferresources/mta/> for more information.

Program Information Report

Mechatronics (APMETR)

Associate in Applied Science Degree

Program Effective Term: Fall 2020

High Skill Occupation

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 three 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

Numerical Control Specialty (NCTL)

NCT 110 Introduction to Computerized Machining (CNC) - II
 NCT 120 2D CAD CAM for Shape Cutting
 NCT 121 Manual Programming and NC Tool Operation
 NCT 123 2D CAD CAM CNC Programming for Mills and Lathes
 NCT 221 Advanced Manual Programming and NC Tool Operation

Articulation:

Eastern Michigan University, several BS degrees;
 Wayne State 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/curriculum/articulation/levelone/colleges/>.

Minimum Concentration Credits Required for the Program:

69

Select a concentration for requirements and total credits required for the program.

Mechatronics Concentrations

Fluid Power Specialty (FPWR) (69 credits)

First Fall 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

First Winter Semester (16 credits)

ELE 111	Electrical Fundamentals	4
ROB 212	Robotics II	4
MEC 100	Materials and Processes	3
MTT 102	Machining for the Technologies	2
Elective	Writing Elective(s)	3

First Spring/Summer Semester (11 credits)

FLP 226	Pneumatics	3
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MEC 101	Blueprint Reading for Manufacturing	2
Elective	Speech/Comp. Elective(s)	3
Elective	Soc. Sci Elective(s)	3

Second Fall Semester (14 credits)

ELE 224	Programmable Controllers (PLCs) I	4
FLP 214	Hydraulic Circuits and Controls	4
ROB 222	Robotics Simulation	2
ROB 223	Robotics III	2
MEC 201	Mechanisms	2

Second Winter Semester (13 credits)

FLP 225	Fluid Power Motion Control	3
MEC 224	Robotics IV	4
Elective	Arts/Human. Elective(s)	3
Elective	Nat. Sci. Elective(s)	3

Minimum Credits Required for the Concentration or Option: 69**Industrial Electronics Specialty (IELC) (70 credits)****First Fall Semester (15 credits)**

ELE 111	Electrical Fundamentals	4
FLP 101	Fluid Power Fundamentals - I	2
FLP 110	Fluid Power Fundamentals - II*	2
ROB 101	Robotics I - I	2
ROB 110	Robotics I - II	2
Elective	Math Elective(s)	3

First Winter Semester (14 credits)

ELE 211	Basic Electronics	4
ROB 212	Robotics II	4
MEC 100	Materials and Processes	3
Elective	Writing Elective(s)	3

First Spring/Summer Semester (11 credits)

FLP 226	Pneumatics	3
MEC 101	Blueprint Reading for Manufacturing	2
Elective	Arts/Human. Elective(s)	3
Elective	Soc. Sci. Elective(s)	3

Second Fall Semester (16 credits)

ROB 222	Robotics Simulation	2
ROB 223	Robotics III	2
ELE 224	Programmable Controllers (PLCs) I	4
NCT 101	Introduction to Computerized Machining (CNC) - I	2
NCT 110	Introduction to Computerized Machining (CNC) - II**	2
MEC 201	Mechanisms	2
MTT 102	Machining for the Technologies	2

Second Winter Semester (14 credits)

MEC 224	Robotics IV	4
ELE 254	Programmable Controllers (PLCs) II	4
Elective	Speech/Comp. Elective(s)	3
Elective	Nat. Sci. Elective(s)	3

Minimum Credits Required for the Concentration or Option: 70**Numerical Control Specialty (NCTL) (71 credits)****First Fall 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

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ROB 101	Robotics I - I	2
ROB 110	Robotics I - II	2
Elective	Math Elective(s) Academic Math Level 4 or higher	3

First Winter Semester (15 credits)

ELE 111	Electrical Fundamentals	4
ROB 212	Robotics II	4
NCT 120	Introduction to 2D CAD CAM Programming and Applications	2
MEC 100	Materials and Processes	3
MTT 102	Machining for the Technologies	2

First Spring/Summer Semester (13 credits)

NCT 123	2D CAD CAM CNC Programming for Mills and Lathes	2
MEC 101	Blueprint Reading for Manufacturing	2
Elective	Arts/Human Elective(s)	3
Elective	Writing Elective(s)	3
Elective	Soc. Sci. Elective(s)	3

Second Fall Semester (14 credits)

ELE 224	Programmable Controllers (PLCs) I	4
NCT 121	Manual Programming and NC Tool Operation	4
ROB 222	Robotics Simulation	2
ROB 223	Robotics III	2
MEC 201	Mechanisms	2

Second Winter Semester (14 credits)

MEC 224	Robotics IV	4
NCT 221	Advanced Manual Programming and NC Tool Operation	4
Elective	Speech/Comp. Elective(s)	3
Elective	Nat. Sci. Elective(s)	3

Minimum Credits Required for the Concentration or Option: 71

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 semester 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 semester 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.

Program Information Report

Occupational Studies (APOST)

Associate in Applied Science Degree

Program Effective Term: **Fall 2020**

High Demand Occupation High Skill Occupation High Wage Occupation

Program is also available online

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. 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.

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

General Studies Program Requirements	(60 credits)
Complete the General Education Requirements for the Associate in Applied Science Degree:	18
Writing/Composition (3)	
Second Writing/Composition or Communication (3)	
Math (3)	
Natural Sciences (3)	
Social and Behavioral Science (3)	
Arts and Humanities (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	22
Minimum Credits Required for the Program:	60

Program Information Report

Powertrain Development Technician (APPDT)

Associate in Applied Science Degree

Program Effective Term: Fall 2020

In this program, students will develop the knowledge and skills to perform in-car powertrain testing in unique testing environments. Jobs in this area require knowledge of automotive engine and electrical systems and experience with an automotive dynamometer. Students will learn about dynamometer setup and testing including the operation of complex analytical test equipment and test software.

First Semester		(15 credits)
ASV 131	Automotive Electrical	4
ASV 132	Automotive Engines	4
MTT 102	Machining for the Technologies	2
	Restricted Electives select a minimum of 2 credits: ABR 114 or WAF 105	2
Elective	Writing Elective(s)	3
Second Semester		(14 credits)
ASV 256	Electrical and Electronic Systems	4
	Restricted Electives select a minimum of 2 credits: ABR 140* or WAF 103	2
	Restricted Electives select a minimum of 2 credits: ABR 111, ABR 140*, ASV 174, ASV 251*, ASV 258*, ASV 270, MEC 120, or MST 110	2
Elective	Speech/Comp. Elective(s)	3
Elective	Nat. Sci. Elective(s)	3
Third Semester		(17 credits)
ASV 277	Automotive Powertrain Systems	4
ASV 279	Automotive Dynamometer and Test	4
MST 230	Advanced Motorcycle Fabrication	3
	Restricted Electives select a minimum of 2 credits: ASV 251* or ASV 258*	2
Elective	Math Elective(s)	4
Fourth Semester		(14 credits)
CST 185	Local and Mobile Networking Essentials	4
MST 220	Dynamometer Operations	4
Elective	Arts/Human. Elective(s)	3
Elective	Soc. Sci. Elective(s)	3

Minimum Credits Required for the Program: 60

Notes:

*Course may only be used to satisfy one Restricted Elective requirement.

**Students may elect to take optional courses in Semester 5 to meet MTA. Please refer to the WCC MTA Transfer Agreement web page <http://www.wccnet.edu/services/transferresources/mta/> for more information.

Program Information Report

Transportation Technologies (APOETT)

Associate in Applied Science Degree

Program Effective Term: Fall 2020

High Demand Occupation High Skill Occupation High Wage Occupation

In this AAS degree, students have a choice to follow any of three different specialty tracks that will prepare them for employment in the transportation industry. This option can be selected if an associate's degree is required for employment or advancement in a field. Each track features a variety of application level classes where students perform lab-oriented practice for the required skills in the automotive service related, auto body repair or motorcycle service fields. Students will learn using the latest technology, methods and tooling in their area of concentration.

Students will select a specialized track in one of the following areas, each of which has its own associated certificated program(s): Auto Service, Auto Body or Motorcycle Service. The program prepares the student for the State of Michigan Mechanics Certification tests as well as the National Institute for Automotive Service Excellence (ASE) Certification Exams. Meet with a divisional advisor or faculty.

Program Admission Requirements:

Academic Reading and Writing Levels of 6; Academic Math Level 3

Minimum Concentration Credits Required for the Program:

60

Select a specialized track in one of the following areas, each of which has its own associated certificated program(s): Auto Service, Auto Body or Motorcycle Service.

Transportation Technologies Concentrations

Auto Body (ABDY) (60 credits)

First Semester (16 credits)

ABR 111	Introduction to Auto Body Repair	4
ABR 112	Introduction to Automotive Refinishing	4
ABR 114	Applied Auto Body Welding	2
Elective	Writing Elective(s)	3
Elective	Math Elective(s)	3

Second Semester (16 credits)

ABR 113	Estimating and Shop Operations	4
ABR 119	The Art of Metal Shaping	2
ABR 123	Technical Auto Body Repair	4
ABR 124	Technical Automotive Refinishing	4
	Restricted Elective(s): Select a minimum of 2 credits from ABR 116, ABR 130, ABR 231, MST 106, or MST 230.	2

Third Semester (16 credits)

ABR 140	Aluminum Welding for Automotive Applications	4
ABR 135 or	Collision-Related Mechanical and Electrical Repairs	4
ASV 130	Automotive Maintenance	4
	Restricted Elective(s): Select a minimum of 2 credits from ABR 116, ABR 130, ABR 231, MST 106, or MST 230.	2
Elective	Speech/Comp. Elective(s)	3
Elective	Arts/Human. Elective(s)	3

Fourth Semester (12 credits)

ABR 201	Lightweighting Composite Repair	4
	Restricted Elective(s): Select a minimum of 2 credits from ABR 116, ABR 130, ABR 231, MST 106, or MST 230.	2
Elective	Nat. Sci. Elective(s)	3
Elective	Soc. Sci. Elective(s)	3

Minimum Credits Required for the Concentration or Option: 60

Program Information Report

Auto Service (ASVC) (61 credits)**First Semester (16 credits)**

ASV 130	Automotive Maintenance	4
ASV 131	Automotive Electrical	4
	Restricted Electives: Select a minimum of 2 credits from ABR 111, ABR 114, ASV 174, ASV 269, ASV 270, ASV 277, ASV 279, CST 185, MST 110, MTT 102, or WAF 105.	2
Elective	Math Elective(s)	3
Elective	Writing Elective(s)	3

Second Semester (17 credits)

ASV 132	Automotive Engines	4
ASV 133	Automotive Fuel Systems	4
ASV 134	Automotive Transmissions	4
ASV 135	Facility Operations	3
	Restricted Elective(s): Select a minimum of 2 credits from ABR 140 or WAF 103.	2

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
Elective	Speech/Comp Elective(s)	3
Elective	Arts/Human Elective(s)	3

Fourth Semester (12 credits)

ASV 251	Engine Diagnosis and Repair	2
ASV 257	Heating and Air Conditioning Systems	2
ASV 266	Advanced Transmissions	2
Elective	Nat. Sci. Elective(s)	3
Elective	Soc. Sci. Elective(s)	3

Minimum Credits Required for the Concentration or Option: 61**Motorcycle Service (MSVC) (60 credits)****First Semester (16 credits)**

MST 110	Motorcycle Service Technology I	4
ABR 114 or WAF 105	Applied Auto Body Welding Introduction to Welding Processes	2
	Restricted Elective(s): Select a minimum of 4 credits from ABR 119, ABR 201, ASV 130, MST 106, or MST 112.	4
Elective	Writing Elective(s)	3
Elective	Math Elective(s)	3

Second Semester (14 credits)

MST 120	Motorcycle Service Technology II	4
MST 130	Motorcycle Service Technology III	4
MTT 102 or MST 230	Machining for the Technologies Advanced Motorcycle Fabrication	2
	Restricted Elective(s): Select a minimum of 2 credits from ABR 119, ABR 201, ASV 130, MST 106, or MST 112.	2
ABR 140 or WAF 103	Aluminum Welding for Automotive Applications Introduction to Gas Tungsten Arc Welding	2

Third Semester (16 credits)

MST 140	Motorcycle Service Technology IV	4
MST 220	Dynamometer Operations	4
	Restricted Elective(s): Select a minimum of 2 credits from ABR 119, ABR 201, ASV 130, MST 106, or MST 112.	2
Elective	Speech/Comp. Elective(s)	3
Elective	Arts/Human. Elective(s)	3

Fourth Semester (14 credits)

MST 210	Performance Engine Technology	4
MST 225	Advanced Dynamometer Tuning Systems	4

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Elective	Nat. Sci. Elective(s)	3
Elective	Soc. Sci. Elective(s)	3

Minimum Credits Required for the Concentration or Option: 60

Minimum Credits Required for the Program: 60

Program Information Report

Welding Technology (APWLDF)

Associate in Applied Science Degree

Program Effective Term: **Fall 2020**

High Demand Occupation High Wage Occupation

The Welding Technology program offers specialized welding and fabrication instruction through theoretical, practical and technical learning objectives and strategies. The core curriculum specializes in welding and fabrication and delves into the expanses of welding technology as a whole. Students are first introduced to welding, cutting and fabrication safety; theory and fundamentals; and then transition to more advanced welding and fabrication processes and application, such as weld quality, inspection testing and repair techniques and automated welding and cutting systems and operations. Students who successfully complete this program will have learned a diverse skillset giving them opportunities to enter the workforce as entry-level welders, fabricators, field technicians and positions them for higher learning in welding engineering, welding education or materials science.

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/curriculum/articulation/levelone/colleges/>.

First Semester		(14 credits)
Elective	Math Elective(s)	3
NCT 120	Introduction to 2D CAD CAM Programming and Applications	2
WAF 106	Welding Print Reading	3
WAF 109	Welding Safety and OSHA Regulations	2
WAF 125	Introduction to Welding Processes I	2
WAF 126	Introduction to Welding Processes II	2
Second Semester		(13 credits)
WAF 130	Shielded Metal Arc Welding (SMAW)	4
WAF 131	Thermal Cutting, Gouging and Weld Repair	3
WAF 139	Basic Metal Fabrication	3
WAF 140	Inspection and Testing	3
Third Semester		(15 credits)
Elective	Writing Elective(s)	3
WAF 230	Advanced Shielded Metal Arc Welding (SMAW)	4
WAF 231	Gas Tungsten Arc Welding (GTAW)	4
WAF 232	Semi-Automatic Welding Processes	4
Fourth Semester		(12 credits)
Elective	Speech/Comp. Elective(s)	3
WAF 150	Automated Welding and Cutting	3
WAF 210	Welding Metallurgy	3
WAF 233	Submerged Arc and Flux Core Arc Welding	3
Fifth Semester		(12 credits)
Elective	Arts/Human. Elective(s)	3
Elective	Nat. Sci. Elective(s)	3
Elective	Soc. Sci. Elective(s)	3
WAF 239	Advanced Metal Fabrication	3
Minimum Credits Required for the Program:		66

Program Information Report

General Studies (AGGSD)**Associate in General Studies**Program Effective Term: **Fall 2020****Program is also available online**

This degree is designed for students who wish to earn an associate degree by creating a personalized program. It offers two pathways for completion: a pathway to four-year transfer or a pathway to employment in their chosen career. Students will design this 60 credit, multi-disciplinary program in conjunction with an academic advisor and can include coursework from all areas of the college; occupational and academic.

Minimum Option Credits Required for the Program:**60****General Studies Options****Employment Pathway (60 credits)****First Semester (15 credits)**

Elective	Writing Elective(s)	3-4
Elective	Math Elective(s)	3
	Concentration 1	3
	Concentration 2	3
Elective	Elective(s)	3

Second Semester (15 credits)

Elective	Speech/Comp. Elective(s)	3
Elective	Arts/Human. Elective(s)	3
	Concentration 3	3
Elective	Elective(s)	3
Elective	Elective(s)	3

Third Semester (15 credits)

Elective	Nat. Sci. Elective(s)	3-4
	Concentration 4	3
	Concentration 5	3
Elective	Elective(s)	3
Elective	Elective(s)	3

Fourth Semester (15 credits)

Elective	Soc. Sci. Elective(s)	3
	Concentration 6	3
Elective	Elective(s)	3
Elective	Elective(s)	3
Elective	Electives to reach a minimum of 60 credits	3

Minimum Credits Required for the Concentration or Option: 60**Transfer Pathway (60 credits)****First Semester (15 credits)**

Elective	Writing Elective(s)	3-4
Elective	Math Elective(s)	3
	Concentration 1	3
	Concentration 2	3
Elective	Elective(s)	3

Second Semester (15 credits)

Elective	Speech/Comp. Elective(s)	3
Elective	Nat. Sci. Elective(s)	3
Elective	Arts/Human. Elective(s)	3
	Concentration 3	3
Elective	Elective(s)	3

Third Semester (15 credits)

Elective	Nat. Sci. Lab Elective(s)	3-4
Elective	Soc. Sci. Elective(s) 1	3

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	Concentration 4	3
	Concentration 5	3
Elective	Elective(s)	3
Fourth Semester		(15 credits)
Elective	Soc. Sci. Elective(s) 2	3
Elective	Arts/Human. Elective(s) 2	3
	Concentration 6	3
Elective	General Education electives to reach a minimum of 30 credit hours as needed	3
Elective	Electives to reach a minimum of 60 credits (0-3 credits)	3

Minimum Credits Required for the Concentration or Option: 60

Minimum Credits Required for the Program: 60

Program Information Report

Science, Computer Technology, Engineering & Math

Applied Data Science (CTADS)**Certificate****Program Effective Term: Fall 2020**

The Applied Data Science certificate is intended for students who want to pursue a career in data analytics ("big data") or enhance their current business skills. Students learn how to capture, manipulate, and analyze structured data-the massive volume of numeric values that can be easily stored and sorted. They learn how to transform data into information to enable faster and more intelligent decision-making.

Continuing Eligibility Requirements:

Minimum grade of "C" in major/area courses.

Major/Area Requirements		(17 credits)
BMG 265	Business Statistics	3
BMG 275	Business and Supply Chain Analytics	4
BMG 285 or	Applied Data Analytics	4
CIS 285	Applied Data Analytics	4
CIS 110	Introduction to Computer Information Systems	3
CIS 282	Database Principles and Application	3

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

Program Information Report

Automotive Cybersecurity (CTACYB)

Certificate

Program Effective Term: Fall 2020

High Demand Occupation High Skill Occupation High Wage Occupation

This certificate programs is designed to meet the emerging demand for highly skilled automotive cybersecurity professionals. In this certificate program, students are introduced to the skills and strategies needed to test security related to automobile networks and related infrastructure. Students will work with the various automobile networks (CAN, LIN, Ethernet, and FlexRay) and explore protocols and messages produced by the vehicle that could be vulnerable to attacks. Students will consider risk mitigation technologies including authentication, encryption and firewall technologies.

Learners in this program acquire the following skills: Learn basic networking concepts including V2V, V2I and V2X communication; Understand common security terms and concepts and how they relate to automobiles in both a technical and compliance nature; Understand relevant vehicle technologies including ECU's (Electronic control unit) and basic electrical theory; Read and write basic computer programs and scripts; Develop process and procedures for testing the security of a vehicle's information network; Practice reverse engineering techniques for testing security.

Major/Area Requirements		(19 credits)
ASV 131	Automotive Electrical	4
CPS 120	Introduction to Computer Science	3
CSS 200	Introduction to Network Security - Security+	4
CSS 285	Essentials of Automotive Penetration Testing	4
CST 185	Local and Mobile Networking Essentials	4

Minimum Credits Required for the Program:

19

Program Information Report

Computer Systems Technology (CTCSTC) Certificate

Program Effective Term: Fall 2020

High Demand Occupation High Skill Occupation High Wage Occupation

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/curriculum/articulation/levelone/colleges/>.

Major/Area Requirements		(17 credits)
CST 118	Microsoft Command Line Fundamentals	2
CST 160	Computer Technology I	4
CST 165	Computer Technology II	4
CST 185	Local and Mobile Networking Essentials	4
BMG 205 or	Creating the Customer Experience	
CST 174 or	CST Co-op I	
CST 270	Computer Forensics I	3-4

Minimum Credits Required for the Program: 17

Program Information Report

Engineering and Design Technology (CTEDT)

Certificate

Program Effective Term: Fall 2020

High Demand Occupation High Skill Occupation High Wage Occupation

The Engineering Design Technology program prepares students to create and design products using engineering software and production methods used in today's growing global economy. Students will be introduced to product design processes and engineering and design technology concepts. Using various software tools, students will experiment with design concepts as a mean to developing unique products for the construction, automotive or other production industries. Hands-on experience with design-appropriate materials will round out the development process.

Continuing Eligibility Requirements:

Students must earn a "C" or better in all courses.

Major/Area Requirements		(16 credits)
EGT 100	Introduction to Product Design	3
EGT 125	Advanced Engineering Design Technology	3
EGT 150	Engineering Design Technology Material Science	3
EGT 175	Engineering Design Technology Material Processing	3
	Restricted Elective: art, manufacturing, welding, woodworking or other department approved course.	4

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

Program Information Report

Foundations of Information Systems (CTFIS)

Certificate

Program Effective Term: Fall 2020

High Skill Occupation **High Wage Occupation**

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		(10 credits)
CIS 110	Introduction to Computer Information Systems	3
CIS 121	Linux/UNIX I: Fundamentals	4
CPS 120	Introduction to Computer Science	3

Minimum Credits Required for the Program: **10**

Program Information Report

Linux/UNIX Systems (CTLUX) Certificate

Program Effective Term: Fall 2020

This certificate helps prepare students to complete the Linux+ and LPIC-1 industry certificates. Linux is a popular web server, file server and database hosting platform and is commonly used in everything from mobile computing devices to large scale data center environments and supercomputers.

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/curriculum/articulation/levelone/colleges/>.

Program Admission Requirements:

Completion of a CIS (above CIS 100), CPS, or CSS course, or permission of instructor.

Major/Area Requirements		(16 credits)
CIS 121	Linux/UNIX I: Fundamentals	4
CIS 206	Linux/UNIX II: Basic System Administration, Networking, and Security	4
CIS 208	Linux/UNIX III: Intermediate System Administration, Networking, and Security	4
CIS 221	Linux/UNIX Programming and Scripting I	4

Minimum Credits Required for the Program:

16

Notes:

The following sequence of courses is recommended. Please check course descriptions for pre and co-requisites:

I

CIS 121

II

CIS 206

CIS 208

CIS 221

Program Information Report

Principles of Cybersecurity (CTCYS)

Certificate

Program Effective Term: Fall 2020

High Demand Occupation High Skill Occupation High Wage Occupation

Program is also available online

This program is designed to meet the emerging demand for highly skilled cybersecurity professionals within the information technology industry and business community. This certificate program provides an in-depth examination of cybersecurity technology with an emphasis on executing a vulnerability analysis of an organization network and network hardening. The student will be trained to use various tools to analyze networks for vulnerabilities and secure networks through the application of various defense mechanisms including firewalls, intrusion detection and Virtual Private Networks (VPN).

Applying for Admission to the Program:

In order to meet the requirements of the market for jobs in network security, students should have professional or educational experience in network and system administration.

Program Admission Requirements:

Students must have basic knowledge of Linux, Windows, working at the command line of any operating system and networking.

Continuing Eligibility Requirements:

Students must maintain a grade of "C" or better in the program requirements.

Major/Area Requirements		(20 credits)
CNT 206	Introduction to Networks	4
CNT 216	Switching, Routing and Wireless Essentials	4
CSS 200	Introduction to Network Security - Security+	4
CSS 205	Essentials of Network Penetration Testing	4
CSS 210	Network Perimeter Protection - CCNA Security	4

Minimum Credits Required for the Program: 20

Program Information Report

C++ Programming (CVCPGM)

Advanced Certificate

Program Effective Term: Fall 2020

High Skill Occupation High Wage Occupation

[Program is also available online](#)

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

Computer Networking Academy I (CVCNA1)

Advanced Certificate

Program Effective Term: Fall 2020

High Demand Occupation High Skill Occupation High Wage Occupation

[Program is also available online](#)

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	Introduction to Networks	4
CNT 216	Switching, Routing and Wireless Essentials	4
CNT 226	Enterprise Networking, Security, and Automation (ENSA)	4
CNT 236	Connecting Networks	4

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

Program Information Report

Computer Networking Operating Systems I (CVCNO)

Advanced Certificate

Program Effective Term: Fall 2020

High Demand Occupation High Skill Occupation High Wage Occupation

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	Installation, Storage, and Compute - Windows Server 2016	4
CNT 223	Networking with Windows Server 2016	4
CNT 224	Identity with Windows Server 2016	4

Minimum Credits Required for the Program:

15

Notes:

This program is designed to be completed in a two semester time frame.

Program Information Report

Program in Java (CVJVPR)

Advanced Certificate

Program Effective Term: Fall 2020

Program is also available online

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
	Select two of the following courses: CPS 251, CPS 276 or CPS 278, CPS 298	8

Minimum Credits Required for the Program:

16

Program Information Report

Web Database Programming Professional (CVWDPP)

Advanced Certificate

Program Effective Term: Fall 2020

This program focuses on the development of web databases and e-commerce applications. The coursework emphasizes server-side programming and is intended for students with strong programming background. Students will be exposed to a professional team programming exercise. If a student needs exposure to front-end web development, a certificate in the Web Design and Development discipline should be considered.

Applying for Admission to the Program:

Academic Math Level 3 is required to enroll in CPS 161.

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	Web Programming Using Apache, MySQL, and PHP	4
CPS 278	Java Server Programming	4
CPS 298	Professional Team Programming	4
CIS 282 or	Database Principles and Application*	
WEB 230	Advanced JavaScript	3
	Elective(s) Any 100-level or above course to bring the total credits to a minimum of 16.*	1

Minimum Credits Required for the Program:

16

Notes:

*Students who select CIS 282 must take one (1) additional credit to reach 16 credits.

Program Information Report

Computer Systems and Networking (APCSN)**Associate in Applied Science Degree****Program Effective Term: Fall 2020****High Demand Occupation High Skill Occupation High Wage Occupation**

In this associate degree program, students will learn about the latest desktop, server, and networking technologies. This program has a core of hardware, operating system, networking, and scripting courses 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 (Server and Client), and Linux Network Operating Systems.

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/curriculum/articulation/levelone/colleges/>.**Minimum Concentration Credits Required for the Program:****62**

Select a concentration.

Computer Systems and Networking Concentrations**Linux Network Operating System (LNOS) (63 credits)****First Semester (14 credits)**

CST 118	Microsoft Command Line Fundamentals	2
CST 160	Computer Technology I	4
CST 165	Computer Technology II	4
CST 185	Local and Mobile Networking Essentials	4

Second Semester (17 credits)

CIS 121	Linux/UNIX I: Fundamentals	4
CNT 201	Administering Microsoft Windows Client Operating Systems	3
CNT 211 or	Installation, Storage, and Compute - Windows Server 2016	
CNT 223 or	Networking with Windows Server 2016	
CNT 224	Identity with Windows Server 2016	4
Elective	Math Elective(s)	3
Elective	Speech/Comp. Elective(s)	3

Third Semester (19 credits)

CIS 206	Linux/UNIX II: Basic System Administration, Networking, and Security	4
CIS 221	Linux/UNIX Programming and Scripting I	4
CNT 206	Introduction to Networks	4
CNT 216	Switching, Routing and Wireless Essentials	4
Elective	Nat. Sci. Elective(s)	3

Fourth Semester (13 credits)

CIS 208	Linux/UNIX III: Intermediate System Administration, Networking, and Security	4
Elective	Writing Elective(s)*	3
Elective	Arts/Human. Elective(s)	3
Elective	Soc. Sci. Elective(s)	3

Minimum Credits Required for the Concentration or Option: 63**Microsoft Network Operating System (MNOS) (62 credits)****First Semester (14 credits)**

CST 118	Microsoft Command Line Fundamentals	2
CST 160	Computer Technology I	4
CST 165	Computer Technology II	4
CST 185	Local and Mobile Networking Essentials	4

Second Semester (17 credits)

CIS 121	Linux/UNIX I: Fundamentals	4
CNT 201	Administering Microsoft Windows Client Operating Systems	3
CNT 211	Installation, Storage, and Compute - Windows Server 2016	4
Elective	Math Elective(s)	3

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Program Information Report

Elective	Speech/Comp. Elective(s)	3
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Third Semester		(17 credits)
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CNT 206	Introduction to Networks	4
CNT 216	Switching, Routing and Wireless Essentials	4
BMG 205 or	Creating the Customer Experience	
CST 270	Computer Forensics I	3
Elective	Nat. Sci. Elective(s)	3
Elective	Soc. Sci. Elective(s)	3

Fourth Semester		(14 credits)
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CNT 223	Networking with Windows Server 2016	4
CNT 224	Identity with Windows Server 2016	4
Elective	Writing Elective(s)*	3
Elective	Arts/Human. Elective(s)	3

Minimum Credits Required for the Concentration or Option: 62

Local and Wide Area Networking (NETW)		(62 credits)
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First Semester		(14 credits)
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CST 118	Microsoft Command Line Fundamentals	2
CST 160	Computer Technology I	4
CST 165	Computer Technology II	4
CST 185	Local and Mobile Networking Essentials	4

Second Semester		(17 credits)
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CIS 121	Linux/UNIX I: Fundamentals	4
CNT 201	Administering Microsoft Windows Client Operating Systems	3
CNT 211 or	Installation, Storage, and Compute - Windows Server 2016	
CNT 223 or	Networking with Windows Server 2016	
CNT 224	Identity with Windows Server 2016	4
Elective	Math Elective(s)	3
Elective	Speech/Comp. Elective(s)	3

Third Semester		(17 credits)
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CNT 206	Introduction to Networks	4
CNT 216	Switching, Routing and Wireless Essentials	4
BMG 205 or	Creating the Customer Experience	
CST 270	Computer Forensics I	3
Elective	Nat. Sci. Elective(s)	3
Elective	Soc. Sci. Elective(s)	3

Fourth Semester		(14 credits)
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CNT 226	Enterprise Networking, Security, and Automation (ENSA)	4
CNT 290 or	Network Forensics	
CSS 210	Network Perimeter Protection - CCNA Security	4
Elective	Writing Elective(s)*	3
Elective	Arts/Human. Elective(s)	3

Minimum Credits Required for the Concentration or Option: 62

Minimum Credits Required for the Program: 62

Notes:

*Students transferring to a 4-year college should consider taking ENG 111 and completing MTA.

Program Information Report

Cybersecurity (APCSCY)

Associate in Applied Science Degree

Program Effective Term: **Fall 2020**

High Demand Occupation High Skill Occupation High Wage Occupation

In this program, students are introduced to the skills and strategies needed to plan and carry out security measures to protect an organization's computer networks and systems. Students will learn networking and network security skills using server, infrastructure and perimeter technologies working in Linux operating systems, Cisco infrastructure and perimeter devices, and Microsoft operating systems.

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/curriculum/articulation/levelone/colleges/>.

Continuing Eligibility Requirements:

Minimum grade of "C" in all major courses

First Semester		(14 credits)
CIS 121	Linux/UNIX I: Fundamentals	4
CNT 201	Administering Microsoft Windows Client Operating Systems	3
CNT 206	Introduction to Networks	4
Elective	Writing Elective(s)*	3
Second Semester		(15 credits)
CNT 216	Switching, Routing and Wireless Essentials	4
CPS 141	Introduction to Programming Using Python	4
CSS 200	Introduction to Network Security - Security+	4
Elective	Speech/Comp. Elective(s)	3
Third Semester		(16 credits)
CSS 205	Essentials of Network Penetration Testing	4
CSS 210	Network Perimeter Protection - CCNA Security	4
CNT 211 or	Installation, Storage, and Compute - Windows Server 2016	
CNT 223 or	Networking with Windows Server 2016	
CNT 224	Identity with Windows Server 2016	4
MTH 160	Basic Statistics	4
Fourth Semester		(17 credits)
CNT 290	Network Forensics	4
CSS 225	Cybersecurity Operations - CCNA Cyber Ops	4
Elective	Arts/Human. Elective(s)	3
Elective	Nat. Sci. Elective(s)	3
Elective	Soc. Sci. Elective(s)	3
Minimum Credits Required for the Program:		62

Notes:

*Students planning to transfer to a 4-year college should take ENG 111; otherwise, student may consider ENG 107.

Program Information Report

Engineering Technologist-Manufacturing (APETEC)

Associate in Applied Science Degree

Program Effective Term: Fall 2020

Students in this program will demonstrate proficiency in the operation of various types of automated design/machine tool equipment. Competencies in design, programming, and materials and machine processing will be developed. In addition, students will hone skills in the manufacturing and troubleshooting of mechanical parts and the setup and operations of advanced manufacturing systems. Students will apply problem-solving skills learned in the program to create innovative solutions for real-world manufacturing challenges in preparation for entry-level Engineering Technologist or Technician positions.

Program Admission Requirements:

College level reading and writing levels of 6 and math level 4 are required.

First Semester (13 credits)

MEC 100	Materials and Processes	3
MEC 101	Blueprint Reading for Manufacturing	2
MTT 102	Machining for the Technologies	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

Second Semester (16 credits)

COM 101	Fundamentals of Speaking	3
MTH 178	General Trigonometry*	3
MTT 111	Machine Shop Theory and Practice	4
NCT 120	Introduction to 2D CAD CAM Programming and Applications	2
NCT 121	Manual Programming and NC Tool Operation	4

Third Semester (13 credits)

ART 150	Monuments and Cultures	3
NCT 123	2D CAD CAM CNC Programming for Mills and Lathes	2
NCT 221	Advanced Manual Programming and NC Tool Operation	4
PHY 111	General Physics I	4

Fourth Semester (11 credits)

ECO 110	Introduction to Economics	3
NCT 255	Probes, Macros and Conversational Programming for CNC	4
NCT 259	MasterCam 2D and 3D CAM CNC Programming for Mills	4

Fifth Semester (11 credits)

ENG 107	Technical Writing Fundamentals	3
MEC 120	3D-Printing: Machine, Process and Innovation	4
NCT 269	4 and 5 Axis Machining for the CNC Vertical Mills	4

Minimum Credits Required for the Program: 64

Notes:

*MTH 178 requires academic math level 5.

**Students may elect to take optional courses to meet MTA. Please refer to the WCC MTA Transfer Agreement web page <http://www.wccnet.edu/services/transferresources/mta/> for more information.

Program Information Report

Mechatronics (APMETR)

Associate in Applied Science Degree

Program Effective Term: Fall 2020

High Skill Occupation

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 three 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

Numerical Control Specialty (NCTL)

NCT 110 Introduction to Computerized Machining (CNC) - II
 NCT 120 2D CAD CAM for Shape Cutting
 NCT 121 Manual Programming and NC Tool Operation
 NCT 123 2D CAD CAM CNC Programming for Mills and Lathes
 NCT 221 Advanced Manual Programming and NC Tool Operation

Articulation:

Eastern Michigan University, several BS degrees;
 Wayne State 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/curriculum/articulation/levelone/colleges/>.

Minimum Concentration Credits Required for the Program:

69

Select a concentration for requirements and total credits required for the program.

Mechatronics Concentrations

Fluid Power Specialty (FPWR) (69 credits)

First Fall 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

First Winter Semester (16 credits)

ELE 111	Electrical Fundamentals	4
ROB 212	Robotics II	4
MEC 100	Materials and Processes	3
MTT 102	Machining for the Technologies	2
Elective	Writing Elective(s)	3

First Spring/Summer Semester (11 credits)

FLP 226	Pneumatics	3
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MEC 101	Blueprint Reading for Manufacturing	2
Elective	Speech/Comp. Elective(s)	3
Elective	Soc. Sci Elective(s)	3

Second Fall Semester (14 credits)

ELE 224	Programmable Controllers (PLCs) I	4
FLP 214	Hydraulic Circuits and Controls	4
ROB 222	Robotics Simulation	2
ROB 223	Robotics III	2
MEC 201	Mechanisms	2

Second Winter Semester (13 credits)

FLP 225	Fluid Power Motion Control	3
MEC 224	Robotics IV	4
Elective	Arts/Human. Elective(s)	3
Elective	Nat. Sci. Elective(s)	3

Minimum Credits Required for the Concentration or Option: 69**Industrial Electronics Specialty (IELC) (70 credits)****First Fall Semester (15 credits)**

ELE 111	Electrical Fundamentals	4
FLP 101	Fluid Power Fundamentals - I	2
FLP 110	Fluid Power Fundamentals - II*	2
ROB 101	Robotics I - I	2
ROB 110	Robotics I - II	2
Elective	Math Elective(s)	3

First Winter Semester (14 credits)

ELE 211	Basic Electronics	4
ROB 212	Robotics II	4
MEC 100	Materials and Processes	3
Elective	Writing Elective(s)	3

First Spring/Summer Semester (11 credits)

FLP 226	Pneumatics	3
MEC 101	Blueprint Reading for Manufacturing	2
Elective	Arts/Human. Elective(s)	3
Elective	Soc. Sci. Elective(s)	3

Second Fall Semester (16 credits)

ROB 222	Robotics Simulation	2
ROB 223	Robotics III	2
ELE 224	Programmable Controllers (PLCs) I	4
NCT 101	Introduction to Computerized Machining (CNC) - I	2
NCT 110	Introduction to Computerized Machining (CNC) - II**	2
MEC 201	Mechanisms	2
MTT 102	Machining for the Technologies	2

Second Winter Semester (14 credits)

MEC 224	Robotics IV	4
ELE 254	Programmable Controllers (PLCs) II	4
Elective	Speech/Comp. Elective(s)	3
Elective	Nat. Sci. Elective(s)	3

Minimum Credits Required for the Concentration or Option: 70**Numerical Control Specialty (NCTL) (71 credits)****First Fall 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

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ROB 101	Robotics I - I	2
ROB 110	Robotics I - II	2
Elective	Math Elective(s) Academic Math Level 4 or higher	3

First Winter Semester (15 credits)

ELE 111	Electrical Fundamentals	4
ROB 212	Robotics II	4
NCT 120	Introduction to 2D CAD CAM Programming and Applications	2
MEC 100	Materials and Processes	3
MTT 102	Machining for the Technologies	2

First Spring/Summer Semester (13 credits)

NCT 123	2D CAD CAM CNC Programming for Mills and Lathes	2
MEC 101	Blueprint Reading for Manufacturing	2
Elective	Arts/Human Elective(s)	3
Elective	Writing Elective(s)	3
Elective	Soc. Sci. Elective(s)	3

Second Fall Semester (14 credits)

ELE 224	Programmable Controllers (PLCs) I	4
NCT 121	Manual Programming and NC Tool Operation	4
ROB 222	Robotics Simulation	2
ROB 223	Robotics III	2
MEC 201	Mechanisms	2

Second Winter Semester (14 credits)

MEC 224	Robotics IV	4
NCT 221	Advanced Manual Programming and NC Tool Operation	4
Elective	Speech/Comp. Elective(s)	3
Elective	Nat. Sci. Elective(s)	3

Minimum Credits Required for the Concentration or Option: 71

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 semester 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 semester 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.

Program Information Report

Occupational Studies (APOST)

Associate in Applied Science Degree

Program Effective Term: **Fall 2020**

High Demand Occupation High Skill Occupation High Wage Occupation

Program is also available online

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. 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.

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

General Studies Program Requirements	(60 credits)
Complete the General Education Requirements for the Associate in Applied Science Degree:	18
Writing/Composition (3)	
Second Writing/Composition or Communication (3)	
Math (3)	
Natural Sciences (3)	
Social and Behavioral Science (3)	
Arts and Humanities (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	22
Minimum Credits Required for the Program:	60

Program Information Report

Computer Science: Programming in Java (ASCSPJ)

Associate in Science Degree

Program Effective Term: Fall 2020

High Skill Occupation High Wage Occupation

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, BBA, BA and BS degrees;
Madonna 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/curriculum/articulation/levelone/colleges/>.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site:

<http://www.wccnet.edu/curriculum/articulation/levelone/colleges/>.

Program Admission Requirements:

Students must have:

-Academic Math Level of 4 or higher to enroll in CPS 161.

-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
Elective	Arts/Human. Elective(s) 1*	3
Elective	Nat. Sci. 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
Elective	Soc. Sci. Elective(s) 1	3
Third Semester		(16 credits)
CIS 282	Database Principles and Application	3
CPS 278	Java Server Programming	4
Elective	Nat. Sci. Lab Elective(s)	3
Elective	Speech/Comp. Elective(s)	3
Elective	Soc. Sci. Elective(s) 2	3
Fourth Semester		(16 credits)
CIS 121	Linux/UNIX I: Fundamentals	4
CPS 251	Android Programming Using Java	4
CPS 298	Professional Team Programming	4
Elective	Arts/Human. Elective(s) 2*	3
Elective	General Education Elective(s) (0-1 credit) to reach a minimum 30 General Education Credits	1

Minimum Credits Required for the Program:

61

Notes:

*Suggest selecting a WCC general education course that satisfies EMU's Diverse World Requirement. A list of these courses may be found at <http://www.wccnet.edu/academics/classes/emu-diverse-world-requirement/>.

See an advisor to choose courses that meet the requirements of the program to which you are transferring.

Program Information Report

Environmental Science (ASENVS)**Associate in Science Degree****Program Effective Term: Fall 2020****High Demand Occupation High Skill Occupation High Wage Occupation**

This program is designed to prepare students to deal with environmental issues and concerns from a global point of view. Students will focus on physical and natural science as well as understanding the social science perspective. The program integrates biology, chemistry and geology and leads to an associate in science degree which should transfer to four-year institutions following the MTA 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/curriculum/articulation/levelone/colleges/>.

First Semester		(14 credits)
ENV 101	Environmental Science I	4
GEO 101	World Regional Geography	3
Elective	MTH 160 or any math level 4 or higher course	4
Elective	Writing Elective(s)	3-4
Second Semester		(14 credits)
BIO 161	General Biology I Ecology and Evolution	4
GLG 114	Physical Geology	4
Elective	Speech/Comp. Elective(s)	3
Elective	Arts/Human. Elective(s)#	3
Third Semester		(16 credits)
CEM 111	General Chemistry I**	4
ENV 105	Introduction to Environment and Society	3
Elective	Soc. Sci. Elective(s)***	3
Elective	Arts/Human. Elective(s)#	3
Elective	Choose an elective	3
Fourth Semester		(16 credits)
GLG 276	Principles of Geographic Information Systems	3
ENV 174 or	ENV Co-op Education I	
ENV 199	ENV Internship Education	1-3
Elective	Restricted Elective(s): BIO 162, CEM 122, PHY 111, or MTH 169 or higher math course.	4
Elective	Electives to reach a minimum of 60 credits.	8
Minimum Credits Required for the Program:		60

Notes:

#Recommended Arts and Humanities courses: ENG 181, ENG 214, HUM 146, HUM 175 or PHL 205.

**The prerequisite for this course may include a higher math level than those used in the program. See an advisor for assistance.

***Recommended Social Science courses: ANT 201, ECO 110, ECO 211, HST 123, HST 150, HST 235, HST 270, PLS 112, SOC 100, SOC 205 or SOC 207.

Program Information Report

Exercise Science (ASESCI)**Associate in Science Degree**Program Effective Term: **Fall 2020**

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/curriculum/articulation/levelone/colleges/>.

First Semester		(15 credits)
BIO 162	General Biology II Cells and Molecules	4
ENG 111	Composition I	4
MTH 160	Basic Statistics	4
PSY 100	Introduction to Psychology	3
Second Semester		(17 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
MTH 178	General Trigonometry*	3
Third Semester		(16 credits)
BIO 111	Anatomy and Physiology - Normal Structure and Function	5
BIO 201	Physiology of Exercise	4
PHY 111	General Physics I	4
Elective	Arts/Human. Elective(s) 1 (Not COM)	3
Fourth Semester		(14 credits)
BIO 215	Cell and Molecular Biology	4
BIO 225	Tests and Measurements in Exercise Science	3
HSC 131	CPR/AED and First Aid	1
	Soc. Sci. Elective(s) 2 (Not PSY)	3
COM 101	Fundamentals of Speaking	3
Minimum Credits Required for the Program:		62

Notes:

*Students must have an Academic Math Level of 5 to enroll in MTH 178.

Program Information Report

General Studies in Math and Natural Sciences (ASGSMS)

Associate in Science Degree

Program Effective Term: Fall 2020

Program is also available online

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, Environmental Science, Geology, 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 161, BIO 162, BIO 208, BIO 215, BIO 227, BIO 228; CEM 105, CEM 111, CEM 122, CEM 140, CEM 211, CEM 222; ENV 101, ENV 105; GLG 100, GLG 103, GLG 104, GLG 114, GLG 276; MTH 191, MTH 192, MTH 197, MTH 293, MTH 295; PHY 111, PHY 122, PHY 211, PHY 222. Please 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, Chinese, Communication, Computer Information Systems, Computer Networking Technology, Computer Science, Computer Systems Security, Computer Systems Technology, Criminal Justice, Dance, Drama, Economics, English, Environmental Science, French, Geography, Geology, German, Health Science, History, Humanities, 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) 1	3
	Nat. Sci. Elective(s)	3
Second Semester		(13 credits)
	Speech/Comp. Elective(s)	3
	MTH 191 or higher	4
	Arts/Human. Elective(s) 1	3
	Math/Science concentration: select a course	3
Third Semester		(15 credits)
	Elective(s) to reach a minimum 60 credits	3
	Concentration 2: select a course	3
	Math/Science concentration: select a course	3
	Math/Science concentration: select a course	3
	Nat. Sci. Lab Elective(s)	3
Fourth Semester		(16 credits)
	Arts/Human. Elective(s) 2	3
	Concentration 2: select a course	3
	Math/Science concentration: select a course	3
	Soc. Sci. Elective(s) 2	3
	General Education Elective(s) (0-1 credits) to reach a minimum 30 General Education Credits	1
	Elective(s) to reach a minimum 60 credits	3

Minimum Credits Required for the Program: 60

Notes:

Courses used to meet General Education Requirements cannot be counted toward the minimum credits for the concentrations.

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Program Information Report

Information Systems: Programming in C++ (ASISPC)

Associate in Science Degree

Program Effective Term: Fall 2020

High Demand Occupation High Skill Occupation High Wage Occupation

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, BBA degree and several BS degrees;
Madonna 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/curriculum/articulation/levelone/colleges/>.

Program Admission Requirements:

Students need an Academic Math Level of 4 to enroll in MTH 176.

First Semester		(14 credits)
	Nat. Sci. Elective(s)	3
ENG 111	Composition I	4
	Speech/Comp. Elective(s) 2	3
CPS 171	Introduction to Programming with C++	4
Second Semester		(18 credits)
CIS 121	Linux/UNIX I: Fundamentals	4
CPS 271	Object Features of C++	4
	Arts/Human. Elective(s) 1	3
	MTH 176 or higher 4 credit math course	4
	Soc. Sci. Elective(s) 1	3
Third Semester		(14 credits)
CPS 272	Data Structures with C++	4
CPS 276	Web Programming Using Apache, MySQL, and PHP	4
	Soc. Sci. Elective(s) 2	3
	Nat. Sci. Lab Elective(s)	3
Fourth Semester		(14 credits)
CPS 298	Professional Team Programming	4
	Arts/Human. Elective(s) 2	3
	Students must complete 100-level or above transferrable course(s) to reach a minimum of 60 credits.	6
	Possible CIS/CPS electives include: CIS 221, CIS 282, CPS 161, CPS 251, CPS 261, CPS 278	
	General Education Elective(s) (0-1 credits) to reach a minimum 30 General Education Credits	1
Minimum Credits Required for the Program:		60

Notes:

See an advisor to choose courses that meet the requirements of the program to which you are transferring.

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

Math and Science (ASMSAS)

Associate in Science Degree

Program Effective Term: Fall 2020

High Demand Occupation High Skill Occupation High Wage Occupation

This program prepares students to transfer to a four-year college or university to complete a bachelor's degree in actuarial science, biology, chemistry, math, or pharmacy. 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. These concentrations may also list courses used to meet General Education requirements.

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

Mathematics (MATH)

MTH 160 Basic Statistics
 MTH 191 Calculus I
 MTH 192 Calculus II
 MTH 197 Linear Algebra
 MTH 293 Calculus III
 MTH 295 Differential Equations

Pre-Actuarial Science (PPAS)

ECO 211 Principles of Economics I
 ECO 222 Principles of Economics II
 MTH 191 Calculus I
 MTH 192 Calculus II
 MTH 197 Linear Algebra
 MTH 293 Calculus III

Pre-Pharmacy (PPHA)

Two Restricted Electives in Biology (see below)

CEM 211 Organic Chemistry I
 CEM 222 Organic Chemistry II
 PHY 111 General Physics I
 PHY 122 General Physics II

Biology Restricted Electives for Pre-Pharmacy (PPHA): BIO 111, BIO 161, BIO 162, BIO 208, BIO 237, BIO 215, BIO 227 or BIO 228

Optional Transfer Courses for Pre-Pharmacy (PPHA): MTH 160, MTH 192, along with other Biology restricted electives. See a program advisor to select appropriate Biology courses.

Articulation:

This program will fulfill the Michigan Transfer Agreement (MTA) requirements provided the student takes two science courses from two different disciplines. One course must have a lab component. Students must have MTA posted on their transcripts 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 biology and chemistry concentrations require one year of high school chemistry or CEM 101 with a "C" or better to enroll in CEM 111.

Minimum Concentration Credits Required for the Program:

Select a concentration for requirements and total credits required for program.

60

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Program Information Report

Math and Science Concentrations

Biology/Pre-Medicine (BMED) (60 credits)**First Semester (17 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	Elective(s) to reach minimum 60 credits	5

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
Elective	Speech/Comp. Elective(s)	3
Elective	Soc. Sci. Elective(s) 1	3
Elective	Select one course from the following: BIO 111, BIO 208***, BIO 215, BIO 227, BIO 228 or BIO 237	4

Fourth Semester (13 credits)

CEM 222	Organic Chemistry II	4
Elective	Arts/Human. Elective(s) 1	3
Elective	Soc. Sci. Elective(s) 2	3
Elective	Arts/Human. Elective(s) 2	3

Minimum Credits Required for the Concentration or Option: 60**Chemistry/Pre-Medicine (CMED) (60 credits)****First Semester (16 credits)**

CEM 111	General Chemistry I	4
MTH 191	Calculus I	5
PHY 111	General Physics I	4
Elective	Elective(s) to reach minimum 60 credits	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
Elective	Speech/Comp. Elective(s)	3
MTH 197	Linear Algebra	4
Elective	Soc. Sci. Elective(s) 1	3

Fourth Semester (14 credits)

Elective	Elective(s) to reach minimum 60 credits	1
CEM 222	Organic Chemistry II	4
Elective	Arts/Human. Elective(s) 1	3
Elective	Soc. Sci. Elective(s) 2	3
Elective	Arts/Human. Elective(s) 2	3

Minimum Credits Required for the Concentration or Option: 60**Mathematics (MATH) (60 credits)****First Semester (15 credits)**

Elective	Nat. Sci. Elective(s)	3
MTH 191	Calculus I	5
Elective	Select one course from the following: CPS 120, CPS 141, CPS 161 or CPS 171	3

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Program Information Report

ENG 111	Composition I	4
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Second Semester (14 credits)

Elective	Nat. Sci. Lab Elective(s)	3
MTH 160	Basic Statistics	4
MTH 192	Calculus II	4
Elective	Soc. Sci. Elective(s) 1	3

Third Semester (17 credits)

Elective	Speech/Comp. Elective(s)	3
Elective	Elective(s) to reach minimum 60 credits	3
MTH 197	Linear Algebra	4
MTH 293	Calculus III	4
Elective	Soc. Sci. Elective(s) 2	3

Fourth Semester (14 credits)

MTH 295	Differential Equations	4
Elective	Arts/Human. Elective(s) 1	3
Elective	Arts/Human. Elective(s) 2	3
Elective	Elective(s) to reach a minimum of 60 credits.	4

Minimum Credits Required for the Concentration or Option: 60**Pre-Actuarial Science (PPAS) (60 credits)****First Semester (16 credits)**

ACC 111	Principles of Accounting I	3
CPS 161	An Introduction to Programming with Java	4
ENG 111	Composition I	4
MTH 191	Calculus I	5

Second Semester (16 credits)

ACC 122	Principles of Accounting II	3
ECO 211	Principles of Economics I	3
Elective	Nat. Sci. Elective(s)	3
MTH 192	Calculus II	4
Elective	Arts/Human. Elective(s) 1	3

Third Semester (13 credits)

ECO 222	Principles of Economics II	3
MTH 197	Linear Algebra	4
Elective	Nat. Sci. Lab Elective(s)	3
Elective	Soc. Sci. Elective(s) 2+	3

Fourth Semester (15 credits)

MTH 293	Calculus III	4
Elective	Arts/Human. Elective(s) 2++	3
Elective	Speech/Comp. Elective(s)	3
Elective	Elective(s) to reach minimum 60 credits	5

Minimum Credits Required for the Concentration or Option: 60**Pre-Pharmacy (PPHA) (60 credits)****First Semester (16 credits)**

Elective	Biology Restricted Elective	4
CEM 111	General Chemistry I	4
MTH 191	Calculus I	5
Elective	Arts/Human. Elective(s)	3

Second Semester (15 credits)

Elective	Restricted Biology Elective	4
CEM 122	General Chemistry II	4
ENG 111	Composition I	4

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Elective	Elective(s) to reach minimum 60 credits	3
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Third Semester		(17 credits)
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CEM 211	Organic Chemistry I	4
Elective	Speech/Comp. Elective(s)	3
PHY 111	General Physics I	4
Elective	Arts/Human. Elective(s) 2	3
Elective	Soc. Sci. Elective(s) 1	3

Fourth Semester		(12 credits)
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CEM 222	Organic Chemistry II	4
PHY 122	General Physics II	4
Elective	Elective(s) to reach minimum 60 credits	1
Elective	Soc. Sci. Elective(s) 2	3

Minimum Credits Required for the Concentration or Option: 60

Minimum Credits Required for the Program: 60

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.

+See the MTA list to make course selections from any discipline except ECO.

++Transfer students should consider a course from the the EMU Diverse Word Requirements list.

Program Information Report

Pre-Engineering Science Transfer (ASPET)**Associate in Science Degree****Program Effective Term: Fall 2020**

This program addresses the increasing need of students pursuing STEM fields, specifically engineering. Students in this program will have their coursework pre-planned with specific courses laying the groundwork for successful transfer to a four year engineering 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/curriculum/articulation/levelone/colleges/>.

Program Admission Requirements:

- Students below Math Level 7 will need to take prerequisite courses.
- Students may need additional prerequisite coursework for CEM and PHY courses.

First Semester		(16 credits)
CEM 111	General Chemistry I	4
ENG 111	Composition I	4
MTH 191	Calculus I*	5
	Soc. Sci. 1 Elective(s)	3
Second Semester		(14 credits)
CEM 122	General Chemistry II	4
ENG 226	Composition II	3
MTH 192	Calculus II	4
	Arts/Human. 1 Elective(s)	3
Third Semester		(16 credits)
CPS 141 or	Introduction to Programming Using Python	4
CPS 171	Introduction to Programming with C++	4
PHY 211	Analytical Physics I**	5
	Restricted Math Elective 1***	4
	Soc. Sci. 2 Elective(s)	3
Fourth Semester		(15 credits)
COM 101	Fundamentals of Speaking	3
PHY 222	Analytical Physics II	5
	Arts/Human. 2 Elective(s)	3
	Restricted Math Elective 2***	4
Minimum Credits Required for the Program:		61

Notes:

*Students below Math Level 7 will need to take prerequisite courses.

**Students who have not completed a year of High School Physics will need to complete PHY 111.

***Math restricted elective select two from: MTH 197, MTH 293, MTH 295.

Program Information Report

General Studies (AGGSD)**Associate in General Studies**Program Effective Term: **Fall 2020****Program is also available online**

This degree is designed for students who wish to earn an associate degree by creating a personalized program. It offers two pathways for completion: a pathway to four-year transfer or a pathway to employment in their chosen career. Students will design this 60 credit, multi-disciplinary program in conjunction with an academic advisor and can include coursework from all areas of the college; occupational and academic.

Minimum Option Credits Required for the Program:**60****General Studies Options****Employment Pathway (60 credits)****First Semester (15 credits)**

Elective	Writing Elective(s)	3-4
Elective	Math Elective(s)	3
	Concentration 1	3
	Concentration 2	3
Elective	Elective(s)	3

Second Semester (15 credits)

Elective	Speech/Comp. Elective(s)	3
Elective	Arts/Human. Elective(s)	3
	Concentration 3	3
Elective	Elective(s)	3
Elective	Elective(s)	3

Third Semester (15 credits)

Elective	Nat. Sci. Elective(s)	3-4
	Concentration 4	3
	Concentration 5	3
Elective	Elective(s)	3
Elective	Elective(s)	3

Fourth Semester (15 credits)

Elective	Soc. Sci. Elective(s)	3
	Concentration 6	3
Elective	Elective(s)	3
Elective	Elective(s)	3
Elective	Electives to reach a minimum of 60 credits	3

Minimum Credits Required for the Concentration or Option: 60**Transfer Pathway (60 credits)****First Semester (15 credits)**

Elective	Writing Elective(s)	3-4
Elective	Math Elective(s)	3
	Concentration 1	3
	Concentration 2	3
Elective	Elective(s)	3

Second Semester (15 credits)

Elective	Speech/Comp. Elective(s)	3
Elective	Nat. Sci. Elective(s)	3
Elective	Arts/Human. Elective(s)	3
	Concentration 3	3
Elective	Elective(s)	3

Third Semester (15 credits)

Elective	Nat. Sci. Lab Elective(s)	3-4
Elective	Soc. Sci. Elective(s) 1	3

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	Concentration 4	3
	Concentration 5	3
Elective	Elective(s)	3
Fourth Semester		(15 credits)
Elective	Soc. Sci. Elective(s) 2	3
Elective	Arts/Human. Elective(s) 2	3
	Concentration 6	3
Elective	General Education electives to reach a minimum of 30 credit hours as needed	3
Elective	Electives to reach a minimum of 60 credits (0-3 credits)	3

Minimum Credits Required for the Concentration or Option: 60

Minimum Credits Required for the Program: 60

Program Information Report

Skilled Trades & Construction**Apprentice Completion (CTAC)
Certificate****Program Effective Term: Fall 2020****High Demand Occupation High Skill Occupation High Wage Occupation****[Program is also available online](#)**

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.

Major/Area 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.*

Program Information Report

Construction Supervision (CTCNS) Certificate

Program Effective Term: Fall 2020

High Demand Occupation High Skill Occupation High Wage Occupation

Program is also available online

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/curriculum/articulation/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

Program Information Report

Construction Technology I (CTCON1)

Certificate

Program Effective Term: Fall 2020

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/curriculum/articulation/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

Program Information Report

Engineering and Design Technology (CTEDT)

Certificate

Program Effective Term: Fall 2020

High Demand Occupation High Skill Occupation High Wage Occupation

The Engineering Design Technology program prepares students to create and design products using engineering software and production methods used in today's growing global economy. Students will be introduced to product design processes and engineering and design technology concepts. Using various software tools, students will experiment with design concepts as a mean to developing unique products for the construction, automotive or other production industries. Hands-on experience with design-appropriate materials will round out the development process.

Continuing Eligibility Requirements:

Students must earn a "C" or better in all courses.

Major/Area Requirements	(16 credits)
EGT 100 Introduction to Product Design	3
EGT 125 Advanced Engineering Design Technology	3
EGT 150 Engineering Design Technology Material Science	3
EGT 175 Engineering Design Technology Material Processing	3
Restricted Elective: art, manufacturing, welding, woodworking or other department approved course.	4

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

Program Information Report

Heating, Ventilation, Air Conditioning, and Refrigeration - Residential (CTHVRR) Certificate

Program Effective Term: Fall 2020

High Demand Occupation High Skill Occupation High Wage Occupation

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/curriculum/articulation/levelone/colleges/>.

Major/Area Requirements		(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**

Program Information Report

Ironworkers Pre-Apprenticeship (CTPAIW) Certificate

Program Effective Term: Fall 2020

In this certificate program, students will be introduced to the necessary skills needed to be a Union Ironworker across the United States and Canada. Training includes print reading, safety and welding processes used by the Union Ironworker trades. Students who successfully complete the program will be eligible for advanced standing in the Ironworker Local Union Apprenticeship Training Program.

Continuing Eligibility Requirements:

All courses must be completed with a C or better.

Major/Area Requirements	(17 credits)
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WAF 110	Ironworker Pre-Apprenticeship Orientation and Safety	2
WAF 114	Ironworker Pre-Apprenticeship Introduction to Welding	3
WAF 116	Ironworker Pre-Apprenticeship Shielded Metal Arc Welding	4
WAF 117	Ironworker Pre-Apprenticeship Flux Cored Arc Welding	4
WAF 119	Ironworker Pre-Apprenticeship Rigging and Cranes	2
WAF 120	Ironworker Pre-Apprenticeship Print Reading and Contextualized Math	2

Minimum Credits Required for the Program:	17
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Program Information Report

Welding and Fabrication Principles (CTWLDS)

Certificate

Program Effective Term: Fall 2020

High Demand Occupation High Wage Occupation

This certificate introduces students to safe welding and cutting practices and principles including, proper technique and position, weld quality requirements, destructive and non-destructive testing and examination methods, print reading and interpretation of welding symbols as well as basic metal fabrication. Students will use the foundation and working knowledge to weld in all processes, perform repair techniques using thermal cutting and gouging, apply the requirements to executive quality welds and apply CNC programming language that can be used to produce parts that can be assembled and welded. This certificate serves as a fundamental pathway into the Welding and Fabrication Advanced Applications certificate and Welding Technology degree. Students who successfully complete this certificate will have learned the skills sought by the workforce as an entry-level welder and fabricator.

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/curriculum/articulation/levelone/colleges/>.

Major/Area Requirements		(24 credits)
NCT 120	Introduction to 2D CAD CAM Programming and Applications	2
WAF 106	Welding Print Reading	3
WAF 109	Welding Safety and OSHA Regulations	2
WAF 125	Introduction to Welding Processes I	2
WAF 126	Introduction to Welding Processes II	2
WAF 130	Shielded Metal Arc Welding (SMAW)	4
WAF 131	Thermal Cutting, Gouging and Weld Repair	3
WAF 139	Basic Metal Fabrication	3
WAF 140	Inspection and Testing	3

Minimum Credits Required for the Program: 24

Program Information Report

Cabinetmaking/Millwork Technology (CVCMT)

Advanced Certificate

Program Effective Term: Fall 2020

High Demand Occupation High Skill Occupation

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/curriculum/articulation/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

Program Information Report

Construction Technology II (CVCON2)

Advanced Certificate

Program Effective Term: Fall 2020

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/curriculum/articulation/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

Heating, Ventilation, Air Conditioning and Refrigeration - Commercial Trade (CVHVCT) Advanced Certificate

Program Effective Term: Fall 2020

High Demand Occupation High Skill Occupation High Wage Occupation

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/curriculum/articulation/levelone/colleges/>.

Program Admission Requirements:

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

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

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

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

Program Information Report

Welding and Fabrication Advanced Applications (CVWLDN)

Advanced Certificate

Program Effective Term: Fall 2020

High Demand Occupation High Wage Occupation

This advanced certificate combines welding fundamentals with more complex welding, cutting and fabrication techniques and applications aimed to further develop one's skills and core competencies. Students focus on welding using processes and positions common in industry, perform destructive and non-destructive testing, identify weld failures and perform root cause analysis, executive repair techniques, perform advanced fabrication techniques and execute automated welding and cutting programming and operations. Students who successfully complete this advanced certificate will have learned a broad range of essential skillsets critical to the trade and how to apply those skills to manufacturing, automotive, construction, aerospace, oil, military industry, gas and power industries.

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/curriculum/articulation/levelone/colleges/>.

Program Admission Requirements:

Successful completion of the Welding and Fabrication Principles Certificate (CTWLDS).

Continuing Eligibility Requirements:

WAF 233 and WAF 239 require a Math Level 2.

Major/Area Requirements		(24 credits)
WAF 150	Automated Welding and Cutting	3
WAF 210	Welding Metallurgy	3
WAF 230	Advanced Shielded Metal Arc Welding (SMAW)	4
WAF 231	Gas Tungsten Arc Welding (GTAW)	4
WAF 232	Semi-Automatic Welding Processes	4
WAF 233	Submerged Arc and Flux Core Arc Welding	3
WAF 239	Advanced Metal Fabrication	3

Minimum Credits Required for the Program:

24

Program Information Report**Construction Supervision (APCNSP)****Associate in Applied Science Degree****Program Effective Term: Fall 2020****High Demand Occupation High Skill Occupation High Wage Occupation****Program is also available online**

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 prior learning 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

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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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Program Information Report

BAC 221
BAC 222
BAC 223

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/curriculum/articulation/levelone/colleges/>.

Program Admission Requirements:

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

First Semester		(15 credits)
UAS 111	Construction Supervision I: Motivating Employees	3
	Math Elective(s)*	3
	Writing Elective(s)	4
	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/Comp. 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		(15 credits)
UAS 230	Construction Supervision V: Scheduling and Project Management	3
	Union Approved Apprenticeship	9
	Elective to reach 60 credit minimum	3
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)

Program Information Report

Heating, Ventilation, Air Conditioning and Refrigeration (APHVCR)

Associate in Applied Science Degree

Program Effective Term: **Fall 2020**

High Demand Occupation High Skill Occupation High Wage Occupation

This program is a capstone to the Heating, Ventilation, Air Conditioning and Refrigeration - Commercial Trade Advanced Certificate. 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/curriculum/articulation/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
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
	Arts/Human. Elective(s)	3
	Writing 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
Fifth Semester		(9 credits)
HVA 207	Commercial Industry Standards with Competency Exams	3
	Soc. Sci. Elective(s)	3
	Speech/Comp. Elective(s) 2	3
Minimum Credits Required for the Program:		60

Program Information Report

Industrial Training (APITRN)

Associate in Applied Science Degree

Program Effective Term: Fall 2020

High Demand Occupation High Skill Occupation High Wage Occupation

Program is also available online

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 prior learning credits for experience in an area of specialization such as plumbing, pipefitting, HVAC, sprinkler fitting and ironworking.

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/curriculum/articulation/levelone/colleges/>.

Program Admission Requirements:

Open only to United Association and Ironworker instructors.

Major/Area Requirements (22 credits)

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

Ironworker students must complete 15 credits from a combination of required teaching methods courses and technical update courses (IWT courses).

Complete electives (0-10 credits) to meet a minimum 60 credits. 10

General Education Requirements (19 credits)

Writing	Elective(s)	4
UAT 210	Public Speaking*	1.5
UAT 213	Planning, Teaching and Assessing Effective Lessons - Advanced*	1.5
Math	Elective(s)**	3
Nat. Sci.	Elective(s)**	3
Soc. Sci.	Elective(s)	3
Arts/Human.	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.

Minimum Option Credits Required for the Program:

22

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

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UAE 158	Advanced HVACR Practices	3
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Journeyman Ironworker (JMIW)		(26 credits)
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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)
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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)
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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)
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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)
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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)
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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: **63**

Program Information Report

Journeyman Industrial (APJPIM)**Associate in Applied Science Degree****Program Effective Term: Fall 2020****Program is also available online**

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/curriculum/articulation/levelone/colleges/>.

Major/Area Requirements		(42 credits)
	Complete the Apprenticeship Completion Certificate (CTAC), or journeyman-approved coursework in a technical or trade-related area	24-36
Elective	Complete a computer course as approved by your advisor	3
Elective	Take additional credits as needed if total program credits are below 60.	15
General Education Requirements		(18 credits)
Writing	Elective(s)	3
Math	Elective(s)*	3
	Speech/Comp. Elective(s) 2**	3
Nat. Sci.	Elective(s)***	3
Soc. Sci.	Elective(s)	3
Arts/Human.	Elective(s)	3
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).

Program Information Report

Occupational Studies (APOST)

Associate in Applied Science Degree

Program Effective Term: **Fall 2020**

High Demand Occupation High Skill Occupation High Wage Occupation

Program is also available online

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. 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.

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

General Studies Program Requirements	(60 credits)
Complete the General Education Requirements for the Associate in Applied Science Degree:	18
Writing/Composition (3)	
Second Writing/Composition or Communication (3)	
Math (3)	
Natural Sciences (3)	
Social and Behavioral Science (3)	
Arts and Humanities (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	22
Minimum Credits Required for the Program:	60

Program Information Report

Welding Technology (APWLDF)

Associate in Applied Science Degree

Program Effective Term: **Fall 2020**

High Demand Occupation High Wage Occupation

The Welding Technology program offers specialized welding and fabrication instruction through theoretical, practical and technical learning objectives and strategies. The core curriculum specializes in welding and fabrication and delves into the expanses of welding technology as a whole. Students are first introduced to welding, cutting and fabrication safety; theory and fundamentals; and then transition to more advanced welding and fabrication processes and application, such as weld quality, inspection testing and repair techniques and automated welding and cutting systems and operations. Students who successfully complete this program will have learned a diverse skillset giving them opportunities to enter the workforce as entry-level welders, fabricators, field technicians and positions them for higher learning in welding engineering, welding education or materials science.

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/curriculum/articulation/levelone/colleges/>.

First Semester		(14 credits)
Elective	Math Elective(s)	3
NCT 120	Introduction to 2D CAD CAM Programming and Applications	2
WAF 106	Welding Print Reading	3
WAF 109	Welding Safety and OSHA Regulations	2
WAF 125	Introduction to Welding Processes I	2
WAF 126	Introduction to Welding Processes II	2
Second Semester		(13 credits)
WAF 130	Shielded Metal Arc Welding (SMAW)	4
WAF 131	Thermal Cutting, Gouging and Weld Repair	3
WAF 139	Basic Metal Fabrication	3
WAF 140	Inspection and Testing	3
Third Semester		(15 credits)
Elective	Writing Elective(s)	3
WAF 230	Advanced Shielded Metal Arc Welding (SMAW)	4
WAF 231	Gas Tungsten Arc Welding (GTAW)	4
WAF 232	Semi-Automatic Welding Processes	4
Fourth Semester		(12 credits)
Elective	Speech/Comp. Elective(s)	3
WAF 150	Automated Welding and Cutting	3
WAF 210	Welding Metallurgy	3
WAF 233	Submerged Arc and Flux Core Arc Welding	3
Fifth Semester		(12 credits)
Elective	Arts/Human. Elective(s)	3
Elective	Nat. Sci. Elective(s)	3
Elective	Soc. Sci. Elective(s)	3
WAF 239	Advanced Metal Fabrication	3
Minimum Credits Required for the Program:		66

Program Information Report

Construction Management (AACMG)

Associate in Arts Degree

Program Effective Term: Fall 2020

High Demand Occupation High Skill Occupation High Wage Occupation

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 MTA. Students must have their transcripts certified for MTA 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/curriculum/articulation/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		(11 credits)
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
MTH 178	General Trigonometry	3
	Arts/Human. Elective(s) 1	3
	Speech/Comp. Elective(s)	3
Third Semester		(12 credits)
BMG 240	Human Resources Management	3
CMG 180	Application of Construction Materials	3
ECO 211	Principles of Economics I	3
	Nat. Sci. Elective(s) 1	3
Fourth Semester		(16 credits)
BMG 207	Business Communication	3
CMG 170	Construction Graphics	3
GLG 114	Physical Geology	4
	Arts/Human. Elective(s) 2	3
	Soc. Sci. Elective(s) 2	3
Fifth Semester		(6 credits)
BMG 111	Business Law I	3
CMG 200	Construction Systems	3

Minimum Credits Required for the Program: 60

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.

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

Program Information Report**Construction Supervision (ASCNSV)****Associate in Science Degree****Program Effective Term: Fall 2020****High Demand Occupation High Skill Occupation High Wage Occupation****Program is also available online**

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 prior learning 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

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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:

Eastern Michigan University, several BS degrees;
Ironworkers' Apprenticeship and Journeyman Training;
Rowan 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/curriculum/articulation/levelone/colleges/>.

Program Admission Requirements:

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

First Semester		(16 credits)
UAS 111	Construction Supervision I: Motivating Employees	3
	Math Elective(s)	3
	Nat. Sci. Elective(s)	3
	Writing Elective(s) 1	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. Elective(s) 1	3
	Soc. Sci. Elective(s) 1	3
	Union Approved Apprenticeship	4
Third Semester		(15 credits)
UAS 222	Construction Supervision IV: The Construction Project	3
	Arts/Human. Elective(s) 2	3
Elective	Nat. Sci. Lab Elective(s)	3
Elective	General Education Elective(s) (0-2 credits) to reach a minimum 30 General Education Credits	2
	Union Approved Apprenticeship	4
Fourth Semester		(17 credits)
UAS 230	Construction Supervision V: Scheduling and Project Management	3
	Soc. Sci. Elective(s) 2	3
	Speech/Comp. Elective(s)*	3
	Union Approved Apprenticeship	8

Minimum Credits Required for the Program: **64**

Notes:

*UA students may use UAT 210 Public Speaking (1.5 credits) and UAT 213 Planning and Presenting Lessons (1.5 credits). All others should complete an approved Second Writing/Composition or Speech course from the approved list.

Program Information Report

Construction Technology (ASCT)

Associate in Science Degree

Program Effective Term: Fall 2020

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/curriculum/articulation/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) 1*	3

Second Semester (15 credits)

CMG 130	Construction Site Safety and OSHA Regulations	3
CON 105	Construction Framing II	3
	Speech/Comp. Elective(s)	3
PLS 112	Introduction to American Government	3
	Nat. Sci. Elective(s) (not PHY)	3

Third Semester (14 credits)

CON 204	Construction Finishes - Interior	3
CON 205	Construction Finishes - Exterior	3
PHY 105	Conceptual Physics	4
	Arts/Human. Elective(s) 2*	3
	General Education Elective(s) to reach a minimum 30 General Education Credits	1

Fourth Semester (16 credits)

CON 220	Construction Licensing, Contracts, and Start Up	3
CON 230	Construction Production	3
CON 255	Construction Concrete and Masonry	3
	Soc. Sci. Elective(s) 2	3
	Elective(s) to reach a minimum 60 credits	4

Minimum Credits Required for the Program: 60

Notes:

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

Program Information Report

Industrial Training (ASINDT)

Associate in Science Degree

Program Effective Term: **Fall 2020**

High Demand Occupation High Skill Occupation High Wage Occupation

Program is also available online

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 prior learning 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.

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

Program Admission Requirements:

Open only to United Association and Ironworker instructors.

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

General Education Requirements		(32 credits)
Writing	Elective(s)	6
UAT 210	Public Speaking*	1.5
UAT 213	Planning, Teaching and Assessing Effective Lessons - Advanced*	1.5
Math	Elective(s)	3
Nat. Sci.	Elective(s)	3
	Nat. Sci. Lab Elective(s)	3
Soc. Sci.	Elective(s)	6
Arts/Human.	Elective(s)	6
	General Education Elective(s) (0-2 credits) to reach a minimum 30 General Education Credits	2

**Students may choose any WCC courses that meet the Second Composition/Writing or Communication requirement. Only applies to UA programs.*

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

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UAE 158	Advanced HVACR Practices	3
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Journeyman Ironworker (JMIW)		(26 credits)
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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)
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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)
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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)
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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)
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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)
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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)
	Trade Related Elective Credits (19-26)	19-26

Minimum Credits Required for the Program:

63

Program Information Report

General Studies (AGGSD)**Associate in General Studies**Program Effective Term: **Fall 2020****Program is also available online**

This degree is designed for students who wish to earn an associate degree by creating a personalized program. It offers two pathways for completion: a pathway to four-year transfer or a pathway to employment in their chosen career. Students will design this 60 credit, multi-disciplinary program in conjunction with an academic advisor and can include coursework from all areas of the college; occupational and academic.

Minimum Option Credits Required for the Program:**60****General Studies Options****Employment Pathway (60 credits)****First Semester (15 credits)**

Elective	Writing Elective(s)	3-4
Elective	Math Elective(s)	3
	Concentration 1	3
	Concentration 2	3
Elective	Elective(s)	3

Second Semester (15 credits)

Elective	Speech/Comp. Elective(s)	3
Elective	Arts/Human. Elective(s)	3
	Concentration 3	3
Elective	Elective(s)	3
Elective	Elective(s)	3

Third Semester (15 credits)

Elective	Nat. Sci. Elective(s)	3-4
	Concentration 4	3
	Concentration 5	3
Elective	Elective(s)	3
Elective	Elective(s)	3

Fourth Semester (15 credits)

Elective	Soc. Sci. Elective(s)	3
	Concentration 6	3
Elective	Elective(s)	3
Elective	Elective(s)	3
Elective	Electives to reach a minimum of 60 credits	3

Minimum Credits Required for the Concentration or Option: 60**Transfer Pathway (60 credits)****First Semester (15 credits)**

Elective	Writing Elective(s)	3-4
Elective	Math Elective(s)	3
	Concentration 1	3
	Concentration 2	3
Elective	Elective(s)	3

Second Semester (15 credits)

Elective	Speech/Comp. Elective(s)	3
Elective	Nat. Sci. Elective(s)	3
Elective	Arts/Human. Elective(s)	3
	Concentration 3	3
Elective	Elective(s)	3

Third Semester (15 credits)

Elective	Nat. Sci. Lab Elective(s)	3-4
Elective	Soc. Sci. Elective(s) 1	3

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	Concentration 4	3
	Concentration 5	3
Elective	Elective(s)	3
Fourth Semester		(15 credits)
Elective	Soc. Sci. Elective(s) 2	3
Elective	Arts/Human. Elective(s) 2	3
	Concentration 6	3
Elective	General Education electives to reach a minimum of 30 credit hours as needed	3
Elective	Electives to reach a minimum of 60 credits (0-3 credits)	3

Minimum Credits Required for the Concentration or Option: 60

Minimum Credits Required for the Program: 60

Program Information Report

Transfer

Broadcast Media Arts (AABCM)**Associate in Arts Degree****Program Effective Term: Fall 2020****High Wage Occupation**

The Broadcast Media Arts program provides hands-on training in the realm of radio and gives students experience in live production, script-writing, announcing and editing. The program course offerings emphasize the communication and technical skills needed for jobs in a variety of fields within the media industry, including advertising, public relations, broadcast journalism, project production and producing. This program prepares students to either enter directly into the workforce or transfer to a four-year institution.

Articulation:

Eastern Michigan University; BA and 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/curriculum/articulation/levelone/colleges/>.

First Semester		(15 credits)
COM 101	Fundamentals of Speaking	3
COM 155	Scriptwriting for Broadcast Arts	3
Elective	Math Elective(s)	3
Elective	Soc. Sci. Elective(s) 1	3
Elective	Restricted Elective(s): COM 142, COM 183, COM 210, COM 235, COM 240, DRA 152, FLM 120, GDT 104, JRN 111, PHO 111 or VID 105	3-4
Second Semester		(16 credits)
COM 160	Voice and Articulation	3
ENG 111	Composition I	4
Elective	Nat. Sci. Elective(s)	3
Elective	Restricted Elective(s): Select two courses from COM 142, COM 183, COM 210, COM 235, COM 240, DRA 152, FLM 120, GDT 104, JRN 111, PHO 111 or VID 105	6-7
Third Semester		(15 credits)
COM 130	Introduction to Mass Communication	3
COM 150	Introduction to Radio Production	3
ENG 107	Technical Writing Fundamentals	3
Elective	Nat. Sci. Lab Elective(s)	3
Elective	Restricted Elective(s): COM 142, COM 183, COM 210, COM 235, COM 240, DRA 152, FLM 120, GDT 104, JRN 111, PHO 111 or VID 105	3-4
Fourth Semester		(15 credits)
COM 170	Advanced Radio Production	3
Elective	Soc. Sci. Elective(s) 2	3
Elective	Arts/Human. Elective(s) 2 (not COM)	3
Elective	Restricted Elective(s): Select two courses from COM 142, COM 183, COM 210, COM 235, COM 240, DRA 152, FLM 120, GDT 104, JRN 111, PHO 111 or VID 105	6-7

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

Program Information Report

Business Administration - Transfer (AABATR)**Associate in Arts Degree****Program Effective Term: Fall 2020****High Demand Occupation High Skill Occupation High Wage Occupation****Program is also available online**

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 an area of business. Check with an advisor for information on transferring to a specific college.

Articulation:

Eastern Michigan University, BBA degree*;
 Ferris State University, BS degree;
 Northwood University, BBA degree;
 Oakland University, BS degree;
 University of Michigan-Flint, BA degree;
 Walsh College, BA or BBA degree
 Wayne State University, BS degree.

This program can meet the Michigan Transfer Agreement (MTA). Students must have their transcripts certified for MTA 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: www.wccnet.edu/curriculum/articulation/levelone/colleges/.

Program Admission Requirements:

Students must have:

- Academic Math Level of 3 to enroll in MTH 125 and MTH 160
- Academic Math Level of 4 to enroll in MTH 176

First Semester		(14 credits)
BMG 140	Introduction to Business	3
ENG 111	Composition I	4
MTH 125 or	Everyday College Math	
MTH 160 or	Basic Statistics	
MTH 176	College Algebra	4
Elective	Nat. Sci. Elective(s)	3
Second Semester		(15 credits)
ACC 111	Principles of Accounting I	3
BMG 207	Business Communication	3
CIS 110	Introduction to Computer Information Systems	3
Elective	Speech/Comp. Elective(s)	3
Elective	Arts/Human. Elective(s)	3
Third Semester		(15 credits)
ACC 122	Principles of Accounting II	3
BMG 111	Business Law I	3
BMG 265	Business Statistics	3
ECO 211	Principles of Economics I	3
Elective	Soc. Sci. Elective(s) 2	3
Fourth Semester		(16 credits)
ECO 222	Principles of Economics II	3
Elective	Nat. Sci. Lab Elective(s)	3
Elective	Arts/Human. Elective(s) 2	3
Elective	Electives to reach a minimum of 60 credits. It is recommended students complete one or more of the following: BMG 181, BMG 230, BMG 250. **	7

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

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**See the MTA list to make course selections from any discipline except ECO.*

***Check the requirements of the program and college to which you are transferring.*

Program Information Report

Construction Management (AACMG)

Associate in Arts Degree

Program Effective Term: Fall 2020

High Demand Occupation High Skill Occupation High Wage Occupation

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 MTA. Students must have their transcripts certified for MTA 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/curriculum/articulation/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		(11 credits)
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
MTH 178	General Trigonometry	3
	Arts/Human. Elective(s) 1	3
	Speech/Comp. Elective(s)	3
Third Semester		(12 credits)
BMG 240	Human Resources Management	3
CMG 180	Application of Construction Materials	3
ECO 211	Principles of Economics I	3
	Nat. Sci. Elective(s) 1	3
Fourth Semester		(16 credits)
BMG 207	Business Communication	3
CMG 170	Construction Graphics	3
GLG 114	Physical Geology	4
	Arts/Human. Elective(s) 2	3
	Soc. Sci. Elective(s) 2	3
Fifth Semester		(6 credits)
BMG 111	Business Law I	3
CMG 200	Construction Systems	3
Minimum Credits Required for the Program:		60

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.

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

Program Information Report

Criminal Justice (AACJ)

Associate in Arts Degree

Program Effective Term: Fall 2020

High Demand Occupation High Skill Occupation High Wage Occupation

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:

Eastern Michigan University, BA degree and several BS degrees*;
Madonna University, BS degree.

*For those interested in pursuing a degree in Criminology and Criminal Justice from EMU, students may take 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/curriculum/articulation/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 or	Police/Community Relations	3
CJT 156	Everyday Law	3-4
COM 102	Interpersonal Communication	3
ENG 111	Composition I	4
Elective	Nat. Sci. Elective(s)	3
Second Semester		(16 credits)
CJT 120	Criminal Justice Ethics	3
CJT 160	Criminal Justice Constitutional Law	3
CJT 209	Criminal Law	3
ENG 226	Composition II	3
MTH 160	Basic Statistics	4
Third Semester		(13 credits)
CJT 208	Criminal Evidence and Procedure	3
CJT 223	Juvenile Justice	3
PSY 100	Introduction to Psychology	3
Elective	Nat. Sci. Lab Elective(s)	3
	Elective(s) (0-1 credits) to reach minimum 60 credits	1
Fourth Semester		(15 credits)
ANT 201	Introduction to Cultural Anthropology	3
CJT 144 or	Parole, Probation, and Community Corrections	3
CJT 170	Domestic and International Terrorism	3
CJT 224	Criminal Investigation	3
SOC 100	Principles of Sociology	3
Elective	Arts/Human. Elective(s) 2 Not COM	3

Minimum Credits Required for the Program: 60

Program Information Report

Digital Video Production (AADVP)

Associate in Arts Degree

Program Effective Term: Fall 2020

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.

Students should choose the appropriate faculty for academic advising based on their last name: Dan Kier (A-M), Matt Zacharias (N-Z).

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/curriculum/articulation/levelone/colleges/>.

First Semester		(14 credits)
ENG 111	Composition I	4
	Nat. Sci. Elective(s)	3
FLM 120 or	Introduction to Film	
FLM 150 or	International Cinema	
FLM 185	The Horror Film	3
VID 105	Foundations in Digital Video I	4
Second Semester		(16 credits)
FLM 160	American Film	3
VID 125	Foundations in Digital Video II	4
VID 270	Documentary Video Production I	3
	Arts/Human. Elective(s) 2 (Not FLM)	3
	Math Elective(s)	3
Third Semester		(15 credits)
	Speech/Comp. Elective(s)	3
	Soc. Sci. Elective(s) 1	3
VID 210 or	Screenplays	
VID 240	Digital Cinematography	3
VID 276	Video Graphics I	3
Elective	Select a course from the VID discipline	3
Fourth Semester		(15 credits)
VID 255 or	Green Screen I	
VID 275	Documentary Video Production II	3
	Nat. Sci. Lab Elective(s)	3
	Soc. Sci. Elective(s) 2	3
VID 203	Commercial Video Production	3
VID 295	Portfolio and Project Seminar	3
Minimum Credits Required for the Program:		60

Program Information Report

Early Childhood Education (AAECED)

Associate in Arts Degree

Program Effective Term: Fall 2020

High Demand Occupation High Skill Occupation

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.

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/curriculum/articulation/levelone/colleges/>.

Program Admission Requirements:

Academic Math Level of 3 is required to enroll in required math course. If remedial math course is needed, it is suggested student take during the first semester.

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
HST 201	United States History to 1877	3
Second Semester		(16 credits)
CCP 220	Development and Care of Infants and Toddlers	3
ENG 226	Composition II	3
ENG 240	Children's Literature	3
	Elective(s) to reach a minimum 60 credits*	4
MTH 125 or MTH 176 or	Everyday College Math College Algebra Any Math Level 4 or higher course	3
Third Semester		(15 credits)
CCP 200	Working with Families in a Diverse Society	3
ENG 242	Diverse Children's Literature	3
GLG 202	Earth Science for Elementary Teachers	4
HSC 131	CPR/AED and First Aid	1
PSY 220	Human Development and Learning	4
Fourth Semester		(13 credits)
CCP 204	The Developing Professional in Early Childhood Education**	2
CCP 205	Practicum for the Developing ECE Professional***	1
CCP 251	Education of the Young Child with Exceptionalities	3
HST 200	Michigan History	3
PHY 100	Physics for Elementary Teachers	4

Minimum Credits Required for the Program: 60

Notes:

*Additional suggested general education electives: COM 102, COM 225, MTH 148, MTH 149 or PLS 112
 Additional suggested CCP electives: CCP 211 or CCP 209.

Students must request course substitution(s) from program or division advisor.

**CCP 122 and CCP 123 may be substituted for CCP 204.

***CCP 132 and CCP 133 may be substituted for CCP 205.

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Program Information Report

Elementary Education (AAELEM)

Associate in Arts Degree

Program Effective Term: Fall 2020

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:

Eastern Michigan University, BS degree.

This program meets MTA. Students must have their transcripts certified for MTA 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/curriculum/articulation/levelone/colleges/>.

Program Admission Requirements:

Students must have an Academic Math Level of 3 to enroll in MTH 148. At least two years 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		(14 credits)
ENG 111	Composition I	4
GEO 101	World Regional Geography	3
MTH 148	Functional Math for Elementary Teachers I	4
PLS 112	Introduction to American Government	3

Second Semester		(17 credits)
	Speech/Comp. Elective(s)	3
GLG 202	Earth Science for Elementary Teachers	4
MTH 149	Functional Math for Elementary Teachers II	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
Elective	Arts/Human. Elective(s) 2 Not ENG	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		(14 credits)
HST 201	United States History to 1877	3
Elective	Math Elective(s)	3
PHY 100	Physics for Elementary Teachers	4
PSY 220	Human Development and Learning	4

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

Film Studies (AAFS)

Associate in Arts Degree

Program Effective Term: **Fall 2020**

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		(16 credits)
COM 130	Introduction to Mass Communication	3
FLM 120	Introduction to Film	3
Elective	Math Elective(s)	3
Elective	Nat. Sci. Elective(s)	3
ENG 111	Composition I	4
Second Semester		(17 credits)
COM 101	Fundamentals of Speaking	3
ENG 226	Composition II	3
FLM 160	American Film	3
VID 105	Foundations in Digital Video I	4
	Elective(s) to reach a minimum 60 credits	4
Third Semester		(12 credits)
COM 150	Introduction to Radio Production	3
FLM 150	International Cinema	3
Elective	Nat. Sci. Lab Elective(s)	3
Elective	Soc. Sci. Elective(s) 1	3
Fourth Semester		(15 credits)
FLM 185	The Horror Film	3
FLM 220	Great Directors	3
Elective	Soc. Sci. Elective(s) 2	3
Elective	Elective(s) to reach a minimum of 60 credits	6
Minimum Credits Required for the Program:		60

Program Information Report

Fine Arts (AAFAA)

Associate in Arts Degree

Program Effective Term: **Fall 2020**

This Associate of Art in Fine Arts Degree is a transfer degree designed to be the first two years of a Bachelors of Fine Art (BFA) degree and/or a Bachelors of Art Education (BAE) degree. Students will develop fine art drawing skills, learn 2D and 3D design elements and principles, and color expression skills that are necessary to be successful in completing a BFA or BAE degree. This degree also prepares students who are seeking careers/positions as a fine artists; those artists who are seeking work with community art education programs; gallery managers; professional studio internships; art studio teaching assistants; and those who wish to work as apprentices in community theater set designs.

First Semester		(14 credits)
ART 111	Basic Drawing I	4
ENG 111	Composition I	4
MTH 125 or	Everyday College Math	
	Any Math Level 4 or Higher Course	3
	Nat. Sci. Elective(s)	3
Second Semester		(13 credits)
ART 112	Basic Design I	4
COM 101	Fundamentals of Speaking	3
HUM 101 or	Introduction to the Humanities - Ancient to Medieval	
HUM 102 or	Introduction to the Humanities - Renaissance to Modern	
HUM 103	Introduction to the Humanities - 20th Century to Present	3
	Nat. Sci. Lab Elective(s)	3
Third Semester		(15 credits)
ART 102	Color	4
ART 114	Painting I	4
	Soc. Sci. Elective(s) 1	3
	Restricted Fine Art Elective: Choose ART 120, ART 121, ART 125, ART 127, ART 128, ART 129, or ART 136	4
Fourth Semester		(18 credits)
ART 108	Three-Dimensional Design	4
ART 122	Basic Drawing II	4
	Arts/Human. Elective(s) 2 (Not HUM)	3
	Soc. Sci. Elective(s) 2	3
	Elective(s) to reach minimum 60 credits; students must complete 100-level or above transferrable course(s)	2
	General Education Elective(s) (0-2 credits) to reach a minimum 30 General Education Credits	2
Minimum Credits Required for the Program:		60

Program Information Report

Global Studies (AAGS)**Associate in Arts Degree****Program Effective Term: Fall 2020**

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		(15 credits)
ART 150	Monuments and Cultures	3
ENG 111	Composition I	4
	Foreign Language*	5
	Math Elective(s)	3
Second Semester		(14 credits)
ENG 226	Composition II	3
GEO 101	World Regional Geography	3
	Foreign Language*	5
	Nat. Sci. Elective(s)	3
Third Semester		(16 credits)
	Arts/Human. Elective(s) 1	3
COM 225	Intercultural Communication	3
	Nat. Sci. Lab Elective(s)	3
	Global Studies Elective(s)**	4
	Soc. Sci. Elective(s) 1	3
Fourth Semester		(15 credits)
ANT 201	Introduction to Cultural Anthropology	3
	Arts/Human. Elective(s) 2	3
	Global Studies Elective(s)**	3
	Global Studies Elective(s)**	3
	Soc. Sci. Elective(s) 2	3

Minimum Credits Required for the Program: 60

Notes:

*First Year Language I and II meet the requirements, excludes conversational courses.

**Go to http://webfiles.wccnet.edu/Foreign%20Language/Global_Studies_Course_Options.pdf

Program Information Report**Human Services (AAHUST)****Associate in Arts Degree****Program Effective Term: Fall 2020****High Demand Occupation High Skill Occupation High Wage Occupation**

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:

Concordia University - Ann Arbor, BSW degree;
Eastern Michigan University, BSW degree*;
Madonna University, BSW degree.

*Students should meet with an EMU Department of Social Work advisor before applying for admission to EMU's program.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site:
<http://www.wccnet.edu/curriculum/articulation/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 prerequisite courses 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		(14 credits)
ENG 111	Composition I	4
HSW 100	Introduction to Human Services	3
SOC 100	Principles of Sociology	3
	Any science course with a lab.#	4

Second Semester		(16 credits)
HSW 200	Interviewing and Assessment	3
PSY 100	Introduction to Psychology	3
SOC 205	Race and Ethnic Relations	3
SOC 220	Group Dynamics and Counseling	3
	Restricted Math Elective(s)*	4

Third Semester		(17 credits)
HSW 229	Human Services Success Skills	1
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. Elective(s)**	3

Fourth Semester		(13 credits)
	Arts/Human. Elective(s)***	3
	Nat. Sci. Elective(s) 2	3
COM 101 or	Fundamentals of Speaking	3
COM 102	Interpersonal Communication	3
HSW 230	Field Internship and Seminar I	3
	Elective(s) to reach a minimum 60 credits	1

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

Notes:

#Consult with a program advisor if transferring to any institution other than EMU.

*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, DRA 180, ENG 181, ENG 213, ENG 214, ENG 224 or ENG 242, HUM 150, HUM 175, HUM 221, MUS 180.

***Select another course in a different discipline from the Humanities section of the MTA list. 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.

Program Information Report

Journalism (AAJOUR)

Associate in Arts Degree

Program Effective Term: **Fall 2020**

High Skill Occupation High Wage Occupation

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.

Articulation:

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/curriculum/articulation/levelone/colleges/>.

First Semester		(16 credits)
COM 130	Introduction to Mass Communication	3
ENG 111	Composition I	4
JRN 111	Introduction to Journalism	3
Elective	Math Elective(s)	3
Elective	Nat. Sci. Elective(s)	3
Second Semester		(13 credits)
COM 101 or	Fundamentals of Speaking	3
ENG 226	Composition II	3
JRN 210	Introduction to Copy Editing*	3
Elective	Nat. Sci. Lab Elective(s)	3
	Elective(s) Any 100-level or above course to to reach a minimum 60 credits	4
Third Semester		(15 credits)
JRN 217	Introduction to Feature Writing*	3
Elective	Arts/Human. Elective(s) 1	3
	Elective(s) Any 100-level or above course to to reach a minimum 60 credits	3
Elective	Soc. Sci. Elective(s) 1	3
	Restricted Elective(s) 1 ENG 107 or Any 100-level or above course from COM, GDT, PHO, PLS, VID or WEB	3
Fourth Semester		(16 credits)
JRN 220	Introduction to Digital Journalism*	3
Elective	Arts/Human. Elective(s) 2	3
Elective	Soc. Sci. Elective(s) 2	3
	Restricted Elective(s) 2 ENG 107 or Any 100-level or above course from COM, GDT, PHO, PLS, VID or WEB	3
	Elective(s) Any 100-level or above course to to reach a minimum 60 credits	4
Minimum Credits Required for the Program:		60

Notes:

*JRN 217 is offered in Fall only; JRN 210 and JRN 220 are offered in Winter only.

Program Information Report

Liberal Arts Transfer (AALAT)

Associate in Arts Degree

Program Effective Term: **Fall 2020**

Program is also available online

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, CHN, COM, DAN, DRA, ECO, ENG, FRN, GEO, GRM, HST, HUM, JRN, MUS, PHL, PLS, PSY, SOC, SPN and YOG.

Communication Concentration (COM)

COM 102 Interpersonal Communication

COM 160 Voice and Articulation

COM 183 Persuasion

COM 210 Nonverbal Communication

COM 225 Intercultural Communication

Articulation:

Eastern Michigan University, BA and BS degrees;

Central Michigan University, BS degrees;

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/curriculum/articulation/levelone/colleges/>.

Minimum Concentration Credits Required for the Program:

60

Liberal Arts Transfer Concentrations

Major Concentrations (1-5)		(60 credits)
First Semester		(13 credits)
ENG 111	Composition I	4
Elective	Math Elective(s)	3
	Major Concentration 1	3
	Major Concentration 2	3
Second Semester		(15 credits)
	Arts/Human. Elective(s)	3-5
Elective	Elective(s) 100-level or above transferrable courses	3
Elective	Elective(s) 100-level or above transferrable courses	3
	Major Concentration 3	3
Elective	Nat. Sci. Elective(s)	3
Third Semester		(15 credits)
	Speech/Comp. Elective(s)	3
Elective	Arts/Human. Elective(s) 2 (not COM)	3
Elective	Elective(s) 100-level or above transferrable courses	3
	Major Concentration 4	3
Elective	Soc. Sci. Elective(s) 1	3
Fourth Semester		(17 credits)
Elective	Nat. Sci. Lab Elective(s)	3
Elective	Elective(s) 100-level or above transferrable courses to reach a minimum of 60 credits	6
	Major Concentration 5	3
Elective	Soc. Sci. Elective(s) 2	3
Elective	General Education Elective(s) (0-2 credits) to reach a minimum 30 General Education credits	2

Minimum Credits Required for the Concentration or Option: 60

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Program Information Report

Communication Concentration (COM) (60 credits)**First Semester (12 credits)**

COM 101	Fundamentals of Speaking*	3
COM 210	Nonverbal Communication	3
Elective	Arts/Human. Elective(s) 2 (not COM)	3
Elective	Math Elective(s)	3

Second Semester (16 credits)

COM 102	Interpersonal Communication	3
COM 160	Voice and Articulation	3
ENG 111	Composition I	4
Elective	Elective(s) 100-level or above transferrable courses	3
Elective	Elective(s) 100-level or above transferrable courses	3

Third Semester (15 credits)

COM 183	Persuasion	3
ENG 226	Composition II	3
Elective	Nat. Sci. Elective(s)	3
Elective	Soc. Sci. Elective(s) 1	3
Elective	Elective(s) 100-level or above transferrable courses	3

Fourth Semester (17 credits)

COM 225	Intercultural Communication	3
Elective	Nat. Sci. Lab Elective(s)	3
Elective	Soc. Sci. Elective(s) 2	3
Elective	Elective(s) 100-level or above transferrable courses to reach a minimum of 60 credits	6
Elective	General Education Elective(s) (0-2 credits) to reach a minimum 30 General Education credits	2

Minimum Credits Required for the Concentration or Option: 60**Minimum Credits Required for the Program: 60****Notes:**

*Satisfies one of the Arts and Humanities requirements.

A course counted for general education or program requirements may not also be counted for a Major Concentration. See an advisor for assistance in choosing courses.

Program Information Report

Paralegal Studies/Pre-Law (AAPSPL)**Associate in Arts Degree****Program Effective Term: Fall 2020**

This program prepares students for entry-level positions or further study in the field of law. Entry-level paralegal positions are available in legal offices such as corporate, prosecuting and public defense in addition to some courts. Under the supervision of an attorney, paralegals may assist with research, court filings, documentation and depositions. Students who wish to continue their education may continue on to a bachelor's degree or a Juris Doctorate 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/curriculum/articulation/levelone/colleges/>.**First Semester (17 credits)**

CJT 130	Introduction to Paralegal Studies	3
CJT 156	Everyday Law	4
COM 102	Interpersonal Communication	3
ENG 111	Composition I	4
	Nat. Sci. Elective(s)	3

Second Semester (15 credits)

BOS 206	Personal Management Application and Internet Resources	2
CJT 120	Criminal Justice Ethics	3
ENG 226	Composition II	3
MTH 160	Basic Statistics	4
SOC 100	Principles of Sociology	3

Third Semester (14 credits)

ACC 111	Principles of Accounting I	3
CJT 160	Criminal Justice Constitutional Law	3
HST 200	Michigan History	3
	Nat. Sci. Lab Elective(s)*	3
	General Education Elective(s) (0-1 credits) to reach a minimum 30 General Education Credits	1
	Elective(s) to reach minimum 60 credits	1

Fourth Semester (15 credits)

BMG 111	Business Law I	3
CJT 208	Criminal Evidence and Procedure	3
CJT 209	Criminal Law	3
MUS 147	Arts, Media and Entertainment Law	3
PHL 250	Logic	3

Minimum Credits Required for the Program: 61**Notes:****Students wishing to transfer to EMU should follow the articulation guide.*

Program Information Report

Secondary Education (AASECO)

Associate in Arts Degree

Program Effective Term: Fall 2020

Program is also available online

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, BA or 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/curriculum/articulation/levelone/colleges/>.

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
ENG 181 or	African-American Literature	
ENG 214 or	Literature of the Non-Western World	
ENG 242	Diverse Children's Literature	3
	Nat. Sci. Elective(s)	3
	Complete a minimum of 3 credits in your major or minor area.*	3
Second Semester		(12 credits)
	Arts/Human. Elective(s)**	3
	Math Elective(s)	3
PSY 100	Introduction to Psychology	3
	Complete a minimum of 3 credits in a major or minor area.*	3
Third Semester		(16 credits)
PSY 251	Education of Exceptional Children	3
	Nat. Sci. Lab Elective(s)	4
	Complete a minimum of 9 credits in major or minor area.*	9
Fourth Semester		(16 credits)
PSY 220	Human Development and Learning	4
	Social and Behavioral Science Restricted Elective: Choose one HST 121, HST 122, HST 123, HST 201 or HST 202	3
	Complete a minimum of 6 credits in a major or minor area.*	6
	Elective(s) to reach a minimum 60 credits.	3
Minimum Credits Required for the Program:		60

Notes:

A course counted for general education or program requirements may not also be counted for a major/minor area.

*See an advisor to select courses that will meet the requirements of the college to which you are transferring.

**Students following the Michigan Transfer Agreement (MTA) should select their second Arts and Humanities course from any on the approved MTA list except ENG, GDT 101 and PHO 103.

Program Information Report

Technical Communication (AATCD)

Associate in Arts Degree

Program Effective Term: Fall 2020

High Demand Occupation High Skill Occupation High Wage Occupation

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 tools of the technical communication profession, students prepare content for print and online delivery, develop screencast training modules, learn how to conduct a formal job search and create professional portfolios to showcase their skills.

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 MTA 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/curriculum/articulation/levelone/colleges/>.

Program Admission Requirements:

Basic computer literacy.

First Semester		(13 credits)
COM 101	Fundamentals of Speaking	3
ENG 107	Technical Writing Fundamentals	3
ENG 111	Composition I	4
Elective	Math Elective(s)	3
Second Semester		(15 credits)
ENG 208	Technical Writing for Print Delivery	3
ENG 226	Composition II	3
Elective	GDT Elective Select one course from the following: GDT 104, GDT 106 or GDT 108	3
Elective	Soc. Sci. Elective(s) 1*	3
Elective	Soc. Sci. Elective(s) 2*	3
Third Semester		(15 credits)
ENG 209	Technical Writing for Online Delivery	3
Elective	Arts/Human. Elective(s) 1*	3
Elective	Nat. Sci. Elective(s)*	3
Elective	Restricted Elective(s)**	3
Elective	WEB Elective Select one course from the following: WEB 110, WEB 113 or WEB 115	3
Fourth Semester		(17 credits)
ENG 218	Technical Writing for eLearning	3
ENG 245	Job Search Success Seminar	2
Elective	Arts/Human. Elective(s) 2*	3
Elective	Nat. Sci. Lab Elective(s)*	3
Elective	Elective(s) to reach minimum 60 credits	3
Elective	Restricted Elective(s)**	3

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.

**JRN 210 is strongly recommended. Students must meet with the Technical Communication program advisor to select additional elective courses.

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Program Information Report

Computer Science: Programming in Java (ASCSPJ)

Associate in Science Degree

Program Effective Term: Fall 2020

High Skill Occupation High Wage Occupation

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, BBA, BA and BS degrees;
Madonna 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/curriculum/articulation/levelone/colleges/>.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site:

<http://www.wccnet.edu/curriculum/articulation/levelone/colleges/>.

Program Admission Requirements:

Students must have:

-Academic Math Level of 4 or higher to enroll in CPS 161.

-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
Elective	Arts/Human. Elective(s) 1*	3
Elective	Nat. Sci. 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
Elective	Soc. Sci. Elective(s) 1	3
Third Semester		(16 credits)
CIS 282	Database Principles and Application	3
CPS 278	Java Server Programming	4
Elective	Nat. Sci. Lab Elective(s)	3
Elective	Speech/Comp. Elective(s)	3
Elective	Soc. Sci. Elective(s) 2	3
Fourth Semester		(16 credits)
CIS 121	Linux/UNIX I: Fundamentals	4
CPS 251	Android Programming Using Java	4
CPS 298	Professional Team Programming	4
Elective	Arts/Human. Elective(s) 2*	3
Elective	General Education Elective(s) (0-1 credit) to reach a minimum 30 General Education Credits	1

Minimum Credits Required for the Program:

61

Notes:

*Suggest selecting a WCC general education course that satisfies EMU's Diverse World Requirement. A list of these courses may be found at <http://www.wccnet.edu/academics/classes/emu-diverse-world-requirement/>.

See an advisor to choose courses that meet the requirements of the program to which you are transferring.

Program Information Report

Construction Technology (ASCT)**Associate in Science Degree****Program Effective Term: Fall 2020**

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/curriculum/articulation/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) 1*	3

Second Semester (15 credits)

CMG 130	Construction Site Safety and OSHA Regulations	3
CON 105	Construction Framing II	3
	Speech/Comp. Elective(s)	3
PLS 112	Introduction to American Government	3
	Nat. Sci. Elective(s) (not PHY)	3

Third Semester (14 credits)

CON 204	Construction Finishes - Interior	3
CON 205	Construction Finishes - Exterior	3
PHY 105	Conceptual Physics	4
	Arts/Human. Elective(s) 2*	3
	General Education Elective(s) to reach a minimum 30 General Education Credits	1

Fourth Semester (16 credits)

CON 220	Construction Licensing, Contracts, and Start Up	3
CON 230	Construction Production	3
CON 255	Construction Concrete and Masonry	3
	Soc. Sci. Elective(s) 2	3
	Elective(s) to reach a minimum 60 credits	4

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

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

Program Information Report

Environmental Science (ASENVS)

Associate in Science Degree

Program Effective Term: Fall 2020

High Demand Occupation High Skill Occupation High Wage Occupation

This program is designed to prepare students to deal with environmental issues and concerns from a global point of view. Students will focus on physical and natural science as well as understanding the social science perspective. The program integrates biology, chemistry and geology and leads to an associate in science degree which should transfer to four-year institutions following the MTA 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/curriculum/articulation/levelone/colleges/>.

First Semester		(14 credits)
ENV 101	Environmental Science I	4
GEO 101	World Regional Geography	3
Elective	MTH 160 or any math level 4 or higher course	4
Elective	Writing Elective(s)	3-4
Second Semester		(14 credits)
BIO 161	General Biology I Ecology and Evolution	4
GLG 114	Physical Geology	4
Elective	Speech/Comp. Elective(s)	3
Elective	Arts/Human. Elective(s)#	3
Third Semester		(16 credits)
CEM 111	General Chemistry I**	4
ENV 105	Introduction to Environment and Society	3
Elective	Soc. Sci. Elective(s)***	3
Elective	Arts/Human. Elective(s)#	3
Elective	Choose an elective	3
Fourth Semester		(16 credits)
GLG 276	Principles of Geographic Information Systems	3
ENV 174 or	ENV Co-op Education I	
ENV 199	ENV Internship Education	1-3
Elective	Restricted Elective(s): BIO 162, CEM 122, PHY 111, or MTH 169 or higher math course.	4
Elective	Electives to reach a minimum of 60 credits.	8
Minimum Credits Required for the Program:		60

Notes:

#Recommended Arts and Humanities courses: ENG 181, ENG 214, HUM 146, HUM 175 or PHL 205.

**The prerequisite for this course may include a higher math level than those used in the program. See an advisor for assistance.

***Recommended Social Science courses: ANT 201, ECO 110, ECO 211, HST 123, HST 150, HST 235, HST 270, PLS 112, SOC 100, SOC 205 or SOC 207.

Program Information Report

Exercise Science (ASESCI)**Associate in Science Degree****Program Effective Term: Fall 2020**

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/curriculum/articulation/levelone/colleges/>.

First Semester		(15 credits)
BIO 162	General Biology II Cells and Molecules	4
ENG 111	Composition I	4
MTH 160	Basic Statistics	4
PSY 100	Introduction to Psychology	3

Second Semester		(17 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
MTH 178	General Trigonometry*	3

Third Semester		(16 credits)
BIO 111	Anatomy and Physiology - Normal Structure and Function	5
BIO 201	Physiology of Exercise	4
PHY 111	General Physics I	4
Elective	Arts/Human. Elective(s) 1 (Not COM)	3

Fourth Semester		(14 credits)
BIO 215	Cell and Molecular Biology	4
BIO 225	Tests and Measurements in Exercise Science	3
HSC 131	CPR/AED and First Aid	1
	Soc. Sci. Elective(s) 2 (Not PSY)	3
COM 101	Fundamentals of Speaking	3

Minimum Credits Required for the Program: 62

Notes:

*Students must have an Academic Math Level of 5 to enroll in MTH 178.

Program Information Report

General Studies in Math and Natural Sciences (ASGSMS)

Associate in Science Degree

Program Effective Term: Fall 2020

Program is also available online

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, Environmental Science, Geology, 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 161, BIO 162, BIO 208, BIO 215, BIO 227, BIO 228; CEM 105, CEM 111, CEM 122, CEM 140, CEM 211, CEM 222; ENV 101, ENV 105; GLG 100, GLG 103, GLG 104, GLG 114, GLG 276; MTH 191, MTH 192, MTH 197, MTH 293, MTH 295; PHY 111, PHY 122, PHY 211, PHY 222. Please 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, Chinese, Communication, Computer Information Systems, Computer Networking Technology, Computer Science, Computer Systems Security, Computer Systems Technology, Criminal Justice, Dance, Drama, Economics, English, Environmental Science, French, Geography, Geology, German, Health Science, History, Humanities, 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) 1	3
	Nat. Sci. Elective(s)	3
Second Semester		(13 credits)
	Speech/Comp. Elective(s)	3
	MTH 191 or higher	4
	Arts/Human. Elective(s) 1	3
	Math/Science concentration: select a course	3
Third Semester		(15 credits)
	Elective(s) to reach a minimum 60 credits	3
	Concentration 2: select a course	3
	Math/Science concentration: select a course	3
	Math/Science concentration: select a course	3
	Nat. Sci. Lab Elective(s)	3
Fourth Semester		(16 credits)
	Arts/Human. Elective(s) 2	3
	Concentration 2: select a course	3
	Math/Science concentration: select a course	3
	Soc. Sci. Elective(s) 2	3
	General Education Elective(s) (0-1 credits) to reach a minimum 30 General Education Credits	1
	Elective(s) to reach a minimum 60 credits	3

Minimum Credits Required for the Program: 60

Notes:

Courses used to meet General Education Requirements cannot be counted toward the minimum credits for the concentrations.

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Program Information Report

Health Program Preparation (ASHPP)

Associate in Science Degree

Program Effective Term: Fall 2020

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.

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/curriculum/articulation/levelone/colleges/>.

Continuing Eligibility Requirements:

Minimum cumulative GPA of 2.8 or minimum GPA for intended health program

First Semester		(13 credits)
Elective	Soc. Sci. Elective(s) 1	3
ENG 111	Composition I	4
Elective	Math Elective(s)	3
Elective	Nat. Sci. Elective(s)	3
Second Semester		(15 credits)
Elective	Nat. Sci. Lab Elective(s) 2	3
Elective	Soc. Sci. Elective(s) 2	3
Elective	Speech/Comp. Elective(s) 2	3
	Area Studies Elective(s)*	6
Third Semester		(15 credits)
Elective	Arts/Human. Elective(s) 1	3
HSC 101	Healthcare Terminology	1
	Area Studies Elective*	3
	Area Studies Elective*	3
	Elective(s) to reach a minimum of 60 credits**	5
Fourth Semester		(17 credits)
Elective	Arts/Human. Elective(s) 2	3
Elective	General Education Elective(s) (0-2 credits) to reach a minimum 30 General Education Credits	2
Elective	Area Studies Elective*	3
Elective	Area Studies Elective*	3
Elective	Area Studies Elective(s)*	6
Minimum Credits Required for the Program:		60

Notes:

*Select courses as designated for your intended program and school of choice.

**Students may use one of the following: HSC 100, HSC 103, or RAD 100.

Program Information Report

Information Systems: Programming in C++ (ASISPC)

Associate in Science Degree

Program Effective Term: Fall 2020

High Demand Occupation High Skill Occupation High Wage Occupation

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, BBA degree and several BS degrees;
Madonna 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/curriculum/articulation/levelone/colleges/>.

Program Admission Requirements:

Students need an Academic Math Level of 4 to enroll in MTH 176.

First Semester		(14 credits)
	Nat. Sci. Elective(s)	3
ENG 111	Composition I	4
	Speech/Comp. Elective(s) 2	3
CPS 171	Introduction to Programming with C++	4
Second Semester		(18 credits)
CIS 121	Linux/UNIX I: Fundamentals	4
CPS 271	Object Features of C++	4
	Arts/Human. Elective(s) 1	3
	MTH 176 or higher 4 credit math course	4
	Soc. Sci. Elective(s) 1	3
Third Semester		(14 credits)
CPS 272	Data Structures with C++	4
CPS 276	Web Programming Using Apache, MySQL, and PHP	4
	Soc. Sci. Elective(s) 2	3
	Nat. Sci. Lab Elective(s)	3
Fourth Semester		(14 credits)
CPS 298	Professional Team Programming	4
	Arts/Human. Elective(s) 2	3
	Students must complete 100-level or above transferrable course(s) to reach a minimum of 60 credits.	6
	Possible CIS/CPS electives include: CIS 221, CIS 282, CPS 161, CPS 251, CPS 261, CPS 278	
	General Education Elective(s) (0-1 credits) to reach a minimum 30 General Education Credits	1
Minimum Credits Required for the Program:		60

Notes:

See an advisor to choose courses that meet the requirements of the program to which you are transferring.

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

Math and Science (ASMSAS)

Associate in Science Degree

Program Effective Term: Fall 2020

High Demand Occupation High Skill Occupation High Wage Occupation

This program prepares students to transfer to a four-year college or university to complete a bachelor's degree in actuarial science, biology, chemistry, math, or pharmacy. 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. These concentrations may also list courses used to meet General Education requirements.

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

Mathematics (MATH)

MTH 160 Basic Statistics
 MTH 191 Calculus I
 MTH 192 Calculus II
 MTH 197 Linear Algebra
 MTH 293 Calculus III
 MTH 295 Differential Equations

Pre-Actuarial Science (PPAS)

ECO 211 Principles of Economics I
 ECO 222 Principles of Economics II
 MTH 191 Calculus I
 MTH 192 Calculus II
 MTH 197 Linear Algebra
 MTH 293 Calculus III

Pre-Pharmacy (PPHA)

Two Restricted Electives in Biology (see below)

CEM 211 Organic Chemistry I
 CEM 222 Organic Chemistry II
 PHY 111 General Physics I
 PHY 122 General Physics II

Biology Restricted Electives for Pre-Pharmacy (PPHA): BIO 111, BIO 161, BIO 162, BIO 208, BIO 237, BIO 215, BIO 227 or BIO 228

Optional Transfer Courses for Pre-Pharmacy (PPHA): MTH 160, MTH 192, along with other Biology restricted electives. See a program advisor to select appropriate Biology courses.

Articulation:

This program will fulfill the Michigan Transfer Agreement (MTA) requirements provided the student takes two science courses from two different disciplines. One course must have a lab component. Students must have MTA posted on their transcripts 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 biology and chemistry concentrations require one year of high school chemistry or CEM 101 with a "C" or better to enroll in CEM 111.

Minimum Concentration Credits Required for the Program:

Select a concentration for requirements and total credits required for program.

60

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Program Information Report

Math and Science Concentrations

Biology/Pre-Medicine (BMED) (60 credits)**First Semester (17 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	Elective(s) to reach minimum 60 credits	5

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
Elective	Speech/Comp. Elective(s)	3
Elective	Soc. Sci. Elective(s) 1	3
Elective	Select one course from the following: BIO 111, BIO 208***, BIO 215, BIO 227, BIO 228 or BIO 237	4

Fourth Semester (13 credits)

CEM 222	Organic Chemistry II	4
Elective	Arts/Human. Elective(s) 1	3
Elective	Soc. Sci. Elective(s) 2	3
Elective	Arts/Human. Elective(s) 2	3

Minimum Credits Required for the Concentration or Option: 60**Chemistry/Pre-Medicine (CMED) (60 credits)****First Semester (16 credits)**

CEM 111	General Chemistry I	4
MTH 191	Calculus I	5
PHY 111	General Physics I	4
Elective	Elective(s) to reach minimum 60 credits	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
Elective	Speech/Comp. Elective(s)	3
MTH 197	Linear Algebra	4
Elective	Soc. Sci. Elective(s) 1	3

Fourth Semester (14 credits)

Elective	Elective(s) to reach minimum 60 credits	1
CEM 222	Organic Chemistry II	4
Elective	Arts/Human. Elective(s) 1	3
Elective	Soc. Sci. Elective(s) 2	3
Elective	Arts/Human. Elective(s) 2	3

Minimum Credits Required for the Concentration or Option: 60**Mathematics (MATH) (60 credits)****First Semester (15 credits)**

Elective	Nat. Sci. Elective(s)	3
MTH 191	Calculus I	5
Elective	Select one course from the following: CPS 120, CPS 141, CPS 161 or CPS 171	3

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Program Information Report

ENG 111	Composition I	4
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Second Semester (14 credits)

Elective	Nat. Sci. Lab Elective(s)	3
MTH 160	Basic Statistics	4
MTH 192	Calculus II	4
Elective	Soc. Sci. Elective(s) 1	3

Third Semester (17 credits)

Elective	Speech/Comp. Elective(s)	3
Elective	Elective(s) to reach minimum 60 credits	3
MTH 197	Linear Algebra	4
MTH 293	Calculus III	4
Elective	Soc. Sci. Elective(s) 2	3

Fourth Semester (14 credits)

MTH 295	Differential Equations	4
Elective	Arts/Human. Elective(s) 1	3
Elective	Arts/Human. Elective(s) 2	3
Elective	Elective(s) to reach a minimum of 60 credits.	4

Minimum Credits Required for the Concentration or Option: 60**Pre-Actuarial Science (PPAS) (60 credits)****First Semester (16 credits)**

ACC 111	Principles of Accounting I	3
CPS 161	An Introduction to Programming with Java	4
ENG 111	Composition I	4
MTH 191	Calculus I	5

Second Semester (16 credits)

ACC 122	Principles of Accounting II	3
ECO 211	Principles of Economics I	3
Elective	Nat. Sci. Elective(s)	3
MTH 192	Calculus II	4
Elective	Arts/Human. Elective(s) 1	3

Third Semester (13 credits)

ECO 222	Principles of Economics II	3
MTH 197	Linear Algebra	4
Elective	Nat. Sci. Lab Elective(s)	3
Elective	Soc. Sci. Elective(s) 2+	3

Fourth Semester (15 credits)

MTH 293	Calculus III	4
Elective	Arts/Human. Elective(s) 2++	3
Elective	Speech/Comp. Elective(s)	3
Elective	Elective(s) to reach minimum 60 credits	5

Minimum Credits Required for the Concentration or Option: 60**Pre-Pharmacy (PPHA) (60 credits)****First Semester (16 credits)**

Elective	Biology Restricted Elective	4
CEM 111	General Chemistry I	4
MTH 191	Calculus I	5
Elective	Arts/Human. Elective(s)	3

Second Semester (15 credits)

Elective	Restricted Biology Elective	4
CEM 122	General Chemistry II	4
ENG 111	Composition I	4

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Program Information Report

Elective	Elective(s) to reach minimum 60 credits	3
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Third Semester	(17 credits)
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CEM 211	Organic Chemistry I	4
Elective	Speech/Comp. Elective(s)	3
PHY 111	General Physics I	4
Elective	Arts/Human. Elective(s) 2	3
Elective	Soc. Sci. Elective(s) 1	3

Fourth Semester	(12 credits)
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CEM 222	Organic Chemistry II	4
PHY 122	General Physics II	4
Elective	Elective(s) to reach minimum 60 credits	1
Elective	Soc. Sci. Elective(s) 2	3

Minimum Credits Required for the Concentration or Option: 60

Minimum Credits Required for the Program: 60

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.

+See the MTA list to make course selections from any discipline except ECO.

++Transfer students should consider a course from the the EMU Diverse Word Requirements list.

Program Information Report

Pre-Engineering Science Transfer (ASPET)**Associate in Science Degree****Program Effective Term: Fall 2020**

This program addresses the increasing need of students pursuing STEM fields, specifically engineering. Students in this program will have their coursework pre-planned with specific courses laying the groundwork for successful transfer to a four year engineering 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/curriculum/articulation/levelone/colleges/>.

Program Admission Requirements:

- Students below Math Level 7 will need to take prerequisite courses.
- Students may need additional prerequisite coursework for CEM and PHY courses.

First Semester		(16 credits)
CEM 111	General Chemistry I	4
ENG 111	Composition I	4
MTH 191	Calculus I*	5
	Soc. Sci. 1 Elective(s)	3
Second Semester		(14 credits)
CEM 122	General Chemistry II	4
ENG 226	Composition II	3
MTH 192	Calculus II	4
	Arts/Human. 1 Elective(s)	3
Third Semester		(16 credits)
CPS 141 or	Introduction to Programming Using Python	4
CPS 171	Introduction to Programming with C++	4
PHY 211	Analytical Physics I**	5
	Restricted Math Elective 1***	4
	Soc. Sci. 2 Elective(s)	3
Fourth Semester		(15 credits)
COM 101	Fundamentals of Speaking	3
PHY 222	Analytical Physics II	5
	Arts/Human. 2 Elective(s)	3
	Restricted Math Elective 2***	4
Minimum Credits Required for the Program:		61

Notes:

*Students below Math Level 7 will need to take prerequisite courses.

**Students who have not completed a year of High School Physics will need to complete PHY 111.

***Math restricted elective select two from: MTH 197, MTH 293, MTH 295.

Program Information Report

3D Animation Arts: Game Art /EMU Simulation, Animation & Gaming BS (TR01G4ANID)

Associate Degree/3+1 Transfer

Program Effective Term: Fall 2020

This program prepares students for transfer to a bachelor of science program at Eastern Michigan University where they will further develop their technical knowledge and skills in simulation, animation and gaming. Students should check with an advisor for information on transferring.

Articulation:

Eastern Michigan University, Simulation, Animation and Gaming BS

<http://webfiles.wccnet.edu/Curriculum%20&%20Assessment/web/Articulation%20Agreements/College%20Articulation/EMU%20Simulation%20Animation%20&%20Gaming%20BS.pdf>

For the entire list of articulation agreements:

<http://www.wccnet.edu/curriculum/articulation/levelone/colleges/>

Requirements	(84 credits)
Complete a maximum of eighty-four credits at Washtenaw Community College as outlined on the Articulation Agreement.	84
Complete a minimum of forty-five credits at Eastern Michigan University as outlined on the Articulation Agreement.	0

Minimum Credits Required for the Program: 84

Program Information Report

Accounting/EMU BBA with any Business Major (TR01B8ACCT)

Associate Degree/3+1 Transfer

Program Effective Term: Fall 2020

This program prepares students for transfer to a bachelor of business administration degree program at 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. Students should check with an advisor for information on transferring.

Articulation:

Eastern Michigan University, BBA with any Business Major

<http://webfiles.wccnet.edu/Curriculum%20&%20Assessment/web/Articulation%20Agreements/College%20Articulation/EMU%20Business%20Major%20BBA%20-%20Accounting%20AAS.pdf>

For the entire list of articulation agreements:

<http://www.wccnet.edu/curriculum/articulation/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

Program Information Report

Accounting/Wayne State Multiple Business Degrees BS (TR11B2ACCT)

Associate Degree/3+1 Transfer

Program Effective Term: Fall 2020

This program prepares students for transfer to a bachelor's of science degree program in Business Administration at Wayne State University, where they will further improve their communication and interpersonal skills while developing a specialty in accounting, finance, management, marketing or some other aspect of business. Students should check with an advisor for information on transferring.

Articulation:

Wayne State University, Business Administration Multiple Degrees BS

<http://webfiles.wccnet.edu/Curriculum%20&%20Assessment/web/Articulation%20Agreements/College%20Articulation/WSU%20Business%20Administration%20BS.pdf>

For the entire list of articulation agreements:

<http://www.wccnet.edu/curriculum/articulation/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 credits at Wayne State University as outlined on the Articulation Agreement.	0

Minimum Credits Required for the Program: 82

Program Information Report

Automotive Service/EMU Technology Management BS (TR0105ASRV)

Associate Degree/3+1 Transfer

Program Effective Term: Fall 2020

The Technology Management degree program at Eastern Michigan University 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 and leadership in a variety of fields. Students should check with an advisor for information on transferring.

Articulation:

Eastern Michigan University, Technology Management BS

<http://webfiles.wccnet.edu/Curriculum%20&%20Assessment/web/Articulation%20Agreements/College%20Articulation/EMU%20Technology%20Management%20BS.pdf>

For the entire list of articulation agreements:

<http://www.wccnet.edu/curriculum/articulation/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

Automotive Test Technician/EMU Technology Management BS (TR0106ATT)

Associate Degree/3+1 Transfer

Program Effective Term: Fall 2020

The Technology Management degree program at Eastern Michigan University 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 and leadership in a variety of fields. Students should check with an advisor for information on transferring.

Articulation:

Eastern Michigan University, Technology Management BS

<http://webfiles.wccnet.edu/Curriculum%20&%20Assessment/web/Articulation%20Agreements/College%20Articulation/EMU%20Technology%20Management%20BS.pdf>

For the entire list of articulation agreements:

<http://www.wccnet.edu/curriculum/articulation/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

Baking and Pastry Arts and Management/EMU Technology Management BS (TR01U4BPA)

Associate Degree/3+1 Transfer

Program Effective Term: Fall 2020

The Technology Management degree program at Eastern Michigan University 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 and leadership in a variety of fields. Students should check with an advisor for information on transferring.

Articulation:

Eastern Michigan University, Technology Management BS

<http://webfiles.wccnet.edu/Curriculum%20&%20Assessment/web/Articulation%20Agreements/College%20Articulation/EMU%20Technology%20Management%20BS.pdf>

For the entire list of articulation agreements:

<http://www.wccnet.edu/curriculum/articulation/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

**Broadcast Media Arts/EMU Communication or Comm, Media & Theatre Arts BA (TR01F2BCM)
Associate Degree/3+1 Transfer
Program Effective Term: Fall 2020**

This program prepares students for transfer to a bachelor of arts or science degree program at Eastern Michigan University, where they will further improve their communication and interpersonal skills in personal, professional and public contexts. Students should check with an advisor for information on transferring.

Articulation:

Eastern Michigan University, Communication Major, BA or BS

<http://webfiles.wccnet.edu/Curriculum%20&%20Assessment/web/Articulation%20Agreements/College%20Articulation/EMU%20Communication%20or%20Communication%20Media%20and%20Theatre%20Arts%20BA%20or%20BS.pdf>

For the entire list of articulation agreements:

<http://www.wccnet.edu/curriculum/articulation/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

Broadcast Media Non-Occu/EMU Communication or Comm, Media & Theatre Arts BA (TR01Z1BCM)

Associate Degree/3+1 Transfer

Program Effective Term: Fall 2020

This program prepares students for transfer to a bachelor of arts degree program at Eastern Michigan University, where they will further improve their skills in communication, media and theatre arts. Students should check with an advisor for information on transferring.

Articulation:

Eastern Michigan University, Communication or Communication, Media and Theatre Arts

<http://webfiles.wccnet.edu/Curriculum%20&%20Assessment/web/Articulation%20Agreements/College%20Articulation/EMU%20Communication%20or%20Communication%20Media%20and%20Theatre%20Arts%20BA%20or%20BS.pdf>

For the entire list of articulation agreements:

<http://www.wccnet.edu/curriculum/articulation/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

Business Administration-Transfer/EMU Business Administration BBA (TR01B7BATR)

Associate Degree/3+1 Transfer

Program Effective Term: Fall 2020

This program prepares students for transfer to a bachelor's of business administration degree program at 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. Students should check with an advisor for information on transferring.

Articulation:

Eastern Michigan University, Business Major (approved) BBA

<http://webfiles.wccnet.edu/Curriculum%20&%20Assessment/web/Articulation%20Agreements/College%20Articulation/EMU%20Business%20Major%20BBA%20-%20Business%20Admin%20-%20Transfer%20AA.pdf>

For the entire list of articulation agreements:

<http://www.wccnet.edu/curriculum/articulation/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

Program Information Report

Business Administration-Transfer/Ferris Business Admin. Professional Trk BS (TR09B2BATR) Associate Degree/3+1 Transfer

Program Effective Term: Fall 2020

This program prepares students for transfer to a bachelor of science in business administration professional track degree program at Ferris State 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. Students should check with an advisor for information on transferring.

Articulation:

Ferris State University, Business Administration Professional Track BS

<http://webfiles.wccnet.edu/Curriculum%20&%20Assessment/web/Articulation%20Agreements/College%20Articulation/Ferris%20State%20Univ%20Business%20Administration%20BS.pdf>

For the entire list of articulation agreements:

<http://www.wccnet.edu/curriculum/articulation/levelone/colleges/>

Requirements	(90 credits)
Complete a maximum of ninety credits at Washtenaw Community College as outlined on the Articulation Agreement	90
Complete a minimum of thirty credits at Ferris State University as outlined on the Articulation Agreement	0

Minimum Credits Required for the Program: 90

Program Information Report

**Business Administration-Transfer/Northwood University Management BBA (TR04B2BATR)
Associate Degree/3+1 Transfer**

Program Effective Term: Fall 2020

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. Students should check with an advisor for information on transferring.

Articulation:

Northwood University, Business Administration BBA

<http://webfiles.wccnet.edu/Curriculum%20&%20Assessment/web/Articulation%20Agreements/College%20Articulation/Northwood%20University%20Business%20Administration%20BBA.pdf>

For the entire list of articulation agreements:

<http://www.wccnet.edu/curriculum/articulation/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-six credits at Northwood University as outlined on the Articulation Agreement.	0

Minimum Credits Required for the Program: 97

Program Information Report

**Business Administration-Transfer/Wayne State Multiple Business Degrees BS (TR11B1BATR)
Associate Degree/3+1 Transfer**

Program Effective Term: Fall 2020

This program prepares students for transfer to a bachelor's of science degree program in Business Administration at Wayne State University, where they will further improve their communication and interpersonal skills while developing a specialty in accounting, finance, management, marketing or some other aspect of business. Students should check with an advisor for information on transferring.

Articulation:

Wayne State University, Business Administration Multiple Degrees BS

<http://webfiles.wccnet.edu/Curriculum%20&%20Assessment/web/Articulation%20Agreements/College%20Articulation/WSU%20Business%20Administration%20BS.pdf>

For the entire list of articulation agreements:

<http://www.wccnet.edu/curriculum/articulation/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 credits at Wayne State University as outlined on the Articulation Agreement.	0

Minimum Credits Required for the Program: 82

Program Information Report

Business Office Admin-Law Option/EMU Paralegal Studies BS (TR01B2BOAD)

Associate Degree/3+1 Transfer

Program Effective Term: Fall 2020

High Demand Occupation High Skill Occupation High Wage Occupation

This program prepares students for transfer to a bachelor of science degree program at Eastern Michigan University. Students will learn the necessary skills to become a paralegal. Students should check with an advisor for information on transferring.

Articulation:

Eastern Michigan University, Paralegal Studies (Legal Assisting), BS

<http://webfiles.wccnet.edu/Curriculum%20&%20Assessment/web/Articulation%20Agreements/College%20Articulation/EMU%20Paralegal%20Studies%20BS%20-%20AA%20in%20Paralegal%20Studies%20-%20Pre-Law.pdf>

For the entire list of articulation agreements:

<http://www.wccnet.edu/curriculum/articulation/levelone/colleges/>

Requirements	(79 credits)
Complete a maximum of seventy-nine credits at Washtenaw Community College as outlined on the Articulation Agreement.	79
Complete a minimum of forty-five credits at Eastern Michigan University as outlined on the Articulation Agreement.	0

Minimum Credits Required for the Program: 79

Program Information Report

Business Office Admin-Medical Admin Option/EMU Health Administration BS (TR01B3BOAD)

Associate Degree/3+1 Transfer

Program Effective Term: Fall 2020

This program prepares students for transfer to a bachelor of science degree program at Eastern Michigan University. It is designed to prepare those seeking a career in the administrative sector of the health care delivery system in any of its forms. Students should check with an advisor for information on transferring.

Articulation:

Eastern Michigan University, Health Administration BS

<http://webfiles.wccnet.edu/Curriculum%20&%20Assessment/web/Articulation%20Agreements/College%20Articulation/EMU%20Health%20Administration%20BS.pdf>

For the entire list of articulation agreements:

<http://www.wccnet.edu/curriculum/articulation/levelone/colleges/>

Requirements	(78 credits)
Complete a maximum of seventy-eight credits at Washtenaw Community College as outlined on the Articulation Agreement.	78
Complete a minimum of forty-six credits at Eastern Michigan University as outlined on the Articulation Agreement.	0

Minimum Credits Required for the Program: 78

Program Information Report

Child Development/EMU Children and Families BS (TR01D3CD)

Associate Degree/3+1 Transfer

Program Effective Term: Fall 2020

This program prepares students for transfer to a bachelor's program in Children and Families at Eastern Michigan University. Students will further their training working with young children and developing relationships with families. Students should check with an advisor for information on transferring.

Articulation:

Eastern Michigan University, Children and Families BS

For the entire list of articulation agreements:

<http://www.wccnet.edu/curriculum/articulation/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

Computer Science: Program in Java/EMU Computer Science BS (TR01C4CSPJ)

Associate Degree/3+1 Transfer

Program Effective Term: Fall 2020

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, Computer Science BS

<http://webfiles.wccnet.edu/Curriculum%20&%20Assessment/web/Articulation%20Agreements/College%20Articulation/EMU%20Computer%20Science%20-%20Applied%20BS.pdf>

For the entire list of articulation agreements:

<http://www.wccnet.edu/curriculum/articulation/levelone/colleges/>

Requirements	(81 credits)
Complete a maximum of eighty-one credits at Washtenaw Community College as outlined on the Articulation Agreement.	81
Complete a minimum of forty-three credits at Eastern Michigan University as outlined on the Articulation Agreement.	0

Minimum Credits Required for the Program: 81

Program Information Report

Computer Systems & Networking/EMU Technology Management BS (TR01C6CSN)

Associate Degree/3+1 Transfer

Program Effective Term: Fall 2020

This program prepares students for transfer to a bachelor of science degree program in technology management at Eastern Michigan University, where they will further their skills in computer systems and networking. Students should check with an advisor for information on transferring.

Articulation:

Eastern Michigan University, Technology Management, BS

<http://webfiles.wccnet.edu/Curriculum%20&%20Assessment/web/Articulation%20Agreements/College%20Articulation/EMU%20Technology%20Management%20BS.pdf>

For the entire list of articulation agreements:

<http://www.wccnet.edu/curriculum/articulation/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

Construction Management/EMU Construction Management BS (TR01S1CMG)

Associate Degree/3+1 Transfer

Program Effective Term: Fall 2020

The program prepares students to transfer into a bachelor's of construction management degree at Eastern Michigan 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. Requirements vary by college, so students should obtain the current curriculum for the college to which they are transferring.

Articulation:

Eastern Michigan University, Construction Management BS

<http://webfiles.wccnet.edu/Curriculum%20&%20Assessment/web/Articulation%20Agreements/College%20Articulation/EMU%20Construction%20Management%20BS.pdf>

For the entire list of articulation agreements:

<http://www.wccnet.edu/curriculum/articulation/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-nine credits at Eastern Michigan University as outlined on the Articulation Agreement.	0

Minimum Credits Required for the Program: 75

Program Information Report

**Construction Supervision/Rowan University Construction Management BA (TR13S1CNSV)
Associate Degree/3+1 Transfer**

Program Effective Term: Fall 2020

The program prepares students to transfer into a bachelor's of construction management degree at Rowan University. Students who transfer will continue developing the skills needed to work as supervisors, managers, inspectors for construction sites, buildings and associated facilities. Requirements vary by college, so students should obtain the current curriculum for the college to which they are transferring.

Articulation:

Rowan University, Construction Management BA

<http://webfiles.wccnet.edu/Curriculum%20&%20Assessment/web/Articulation%20Agreements/College%20Articulation/RowanUniversity%20Construction%20Management%20BA.pdf>

For the entire list of articulation agreements:

<http://www.wccnet.edu/curriculum/articulation/levelone/colleges/>

Requirements	(84 credits)
Complete a maximum of eighty-four credits at Washtenaw Community College as outlined on the Articulation Agreement.	84
Complete a minimum of thirty-six credits at Rowan University as outlined on the Articulation Agreement.	0

Minimum Credits Required for the Program: 84

Program Information Report

Construction Technology/EMU Technology Management BS (TR01S2CT)

Associate Degree/3+1 Transfer

Program Effective Term: Fall 2020

The Technology Management degree program at Eastern Michigan University is designed for transfer students with an associate degree. The interdisciplinary curriculum provides the necessary foundation to meet the changing needs of management and leadership in a variety of fields. Students should check with an advisor for information on transferring.

Articulation:

Eastern Michigan University, Technology Management BS

<http://webfiles.wccnet.edu/Curriculum%20&%20Assessment/web/Articulation%20Agreements/College%20Articulation/EMU%20Technology%20Management%20BS.pdf>

For the entire list of articulation agreements:

<http://www.wccnet.edu/curriculum/articulation/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 Eastern Michigan University as outlined on the Articulation Agreement.	0

Minimum Credits Required for the Program: 94

Program Information Report

Criminal Justice/EMU Criminology and Criminal Justice BS (TR01C1CJ)

Associate Degree/3+1 Transfer

Program Effective Term: Fall 2020

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. Students should check with an advisor for information on transferring.

Articulation:

Eastern Michigan University, Criminology and Criminal Justice BS

<http://webfiles.wccnet.edu/Curriculum%20&%20Assessment/web/Articulation%20Agreements/College%20Articulation/EMU%20Criminology%20&%20Criminal%20Justice%20BS.pdf>

For the entire list of articulation agreements:

<http://www.wccnet.edu/curriculum/articulation/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

Criminal Justice/EMU Public Safety Administration BS (TR01C2CJ)

Associate Degree/3+1 Transfer

Program Effective Term: Fall 2020

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. Students should check with an advisor for information on transferring.

Articulation:

Eastern Michigan University, Public Safety Administration BS

<http://webfiles.wccnet.edu/Curriculum%20&%20Assessment/web/Articulation%20Agreements/College%20Articulation/EMU%20Public%20Safety%20Administration%20BS.pdf>

For the entire list of articulation agreements:

<http://www.wccnet.edu/curriculum/articulation/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

Criminal Justice/EMU Technology Management BS (TR01C3CJ)

Associate Degree/3+1 Transfer

Program Effective Term: Fall 2020

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. Students should check with an advisor for information on transferring.

Articulation:

Eastern Michigan University, Technology Management BS

<http://webfiles.wccnet.edu/Curriculum%20&%20Assessment/web/Articulation%20Agreements/College%20Articulation/EMU%20Technology%20Management%20BS.pdf>

For the entire list of articulation agreements:

<http://www.wccnet.edu/curriculum/articulation/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

Criminal Justice/Madonna Criminal Justice BS (TR10C1CJ)

Associate Degree/3+1 Transfer

Program Effective Term: Fall 2020

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 Madonna University. Students should check with an advisor for information on transferring.

Articulation:

Madonna University, Criminal Justice BS

<http://webfiles.wccnet.edu/Curriculum%20&%20Assessment/web/Articulation%20Agreements/College%20Articulation/Madonna%20University%20Criminal%20Justice%20BS.pdf>

For the entire list of articulation agreements:

<http://www.wccnet.edu/curriculum/articulation/levelone/colleges/>

Requirements	(90 credits)
Complete a maximum of ninety credits at Washtenaw Community College as outlined on the Articulation Agreement	90
Complete a minimum of thirty credits at Madonna University as outlined on the Articulation Agreement	0

Minimum Credits Required for the Program: 90

Program Information Report

**Culinary Arts and Management/EMU Hotel and Restaurant Management BS (TR01U3CULA)
Associate Degree/3+1 Transfer**

Program Effective Term: Fall 2020

This program helps prepare students for jobs in the area of culinary arts and hospitality management. Some jobs require at least a bachelor's degree and students can complete their first three years at WCC before transferring to Eastern Michigan University. Students should check with an advisor for information on transferring.

Articulation:

Eastern Michigan University, Hotel & Restaurant Management BS

<http://webfiles.wccnet.edu/Curriculum%20&%20Assessment/web/Articulation%20Agreements/College%20Articulation/EMU%20Hotel%20&%20Restaurant%20Management%20BS.pdf>

For the entire list of articulation agreements:

<http://www.wccnet.edu/curriculum/articulation/levelone/colleges/>

Requirements	(81 credits)
Complete a maximum of eighty-one credits at Washtenaw Community College as outlined on the Articulation Agreement.	81
Complete a minimum of forty-five credits at Eastern Michigan University as outlined on the Articulation Agreement.	0

Minimum Credits Required for the Program: 81

Program Information Report

Digital Video Production/EMU Technology Management BS (TR01G2DVP)

Associate Degree/3+1 Transfer

Program Effective Term: Fall 2020

The Technology Management degree program at Eastern Michigan University is designed for transfer students. This interdisciplinary curriculum provides the necessary foundation to meet the changing needs of management and leadership in a variety of fields. Students should check with an advisor for information on transferring.

Articulation:

Eastern Michigan University, Technology Management BS

<http://webfiles.wccnet.edu/Curriculum%20&%20Assessment/web/Articulation%20Agreements/College%20Articulation/EMU%20Technology%20Management%20BS.pdf>

For the entire list of articulation agreements:

<http://www.wccnet.edu/curriculum/articulation/levelone/colleges/>

Requirements	(94 credits)
Complete a minimum 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

Early Child Ed AA/EMU Children and Families BS (TR01D4ECED)

Associate Degree/3+1 Transfer

Program Effective Term: Fall 2020

This program prepares students for transfer to a bachelor's program in Children and Families at Eastern Michigan University. Students will further their training working with young children and developing relationships with families. Students should check with an advisor for information on transferring.

Articulation:

Eastern Michigan University, Children and Families BS

<http://webfiles.wccnet.edu/Curriculum%20&%20Assessment/web/Articulation%20Agreements/College%20Articulation/EMU%20Children%20and%20Families%20BS%20-%20Early%20Childhood%20Education%20AA.pdf>

For the entire list of articulation agreements:

<http://www.wccnet.edu/curriculum/articulation/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

Exercise Science/EMU Exercise Science BS (TR01X1ESCI)

Associate Degree/3+1 Transfer

Program Effective Term: Fall 2020

The Exercise Science program prepares students for transfer to a bachelor's of exercise science, an interdisciplinary program based on the medical sciences, at Eastern Michigan University. Students should check with an advisor for information on transferring.

Articulation:

Eastern Michigan University, Exercise Science BS

<http://webfiles.wccnet.edu/Curriculum%20&%20Assessment/web/Articulation%20Agreements/College%20Articulation/EMU%20Exercise%20Science%20BS.pdf>

For the entire list of articulation agreements:

<http://www.wccnet.edu/curriculum/articulation/levelone/colleges/>

Requirements	(79 credits)
Complete a maximum of seventy-nine credits at Washtenaw Community College as outlined on the Articulation Agreement.	79
Complete a minimum of forty-five credits at Eastern Michigan University as outlined on the Articulation Agreement.	0

Minimum Credits Required for the Program: 79

Program Information Report

Graphic Design/EMU Bachelor of Fine Arts-Graphic Design Conc BFA (TR01G1GRD)

Associate Degree/3+1 Transfer

Program Effective Term: Fall 2020

This program prepares students for transfer to a bachelor's of fine arts with graphic design concentration degree program at Eastern Michigan University where they will further improve their skills in graphic and publication design. Students should check with an advisor for information on transferring.

Articulation:

Eastern Michigan University, BFA with Graphic Design Concentration

<http://webfiles.wccnet.edu/Curriculum%20&%20Assessment/web/Articulation%20Agreements/College%20Articulation/EMU%20Graphic%20Design%20BFA.pdf>

For the entire list of articulation agreements:

<http://www.wccnet.edu/curriculum/articulation/levelone/colleges/>

Requirements

(85 credits)

Complete a maximum of eighty-five credits at Washtenaw Community College as outlined on the Articulation Agreement.	85
Complete a minimum of thirty-nine credits at Eastern Michigan University as outlined on the Articulation Agreement.	0

Minimum Credits Required for the Program:

85

Program Information Report

Graphic Design/EMU Communication Technology (Graphic Applications) BS (TR01G3GRD)

Associate Degree/3+1 Transfer

Program Effective Term: Fall 2020

This program prepares students for transfer to a bachelor of science degree program in Communication Technology (Graphic Applications) at Eastern Michigan University where they will further improve their skills in graphic design. Students should check with an advisor for information on transferring.

Articulation:

Eastern Michigan University, BS in Communication Technology with Graphic Applications Option

<http://webfiles.wccnet.edu/Curriculum%20&%20Assessment/web/Articulation%20Agreements/College%20Articulation/EMU%20Communication%20Technology%20BS.pdf>

For the entire list of articulation agreements:

www.wccnet.edu/curriculum/articulation/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-eight credits at Eastern Michigan University as outlined on the Articulation Agreement.	0

Minimum Credits Required for the Program: 86

Program Information Report

Heating, Ventilation, Air Condition & Refrig/EMU Technology Management BS (TR01S3HVCR)

Associate Degree/3+1 Transfer

Program Effective Term: Fall 2020

The Technology Management degree program at Eastern Michigan University 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 and leadership in a variety of fields. Students should check with an advisor for information on transferring.

Articulation:

Eastern Michigan University, Technology Management BS

<http://webfiles.wccnet.edu/Curriculum%20&%20Assessment/web/Articulation%20Agreements/College%20Articulation/EMU%20Technology%20Management%20BS.pdf>

For the entire list of articulation agreements:

<http://www.wccnet.edu/curriculum/articulation/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

Human Services/EMU Bachelor of Social Work BSW (TR01H1HUST)

Associate Degree/3+1 Transfer

Program Effective Term: Fall 2020

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. Students should check with an advisor for information on transferring.

Articulation:

Eastern Michigan University, Social Work BSW

<http://webfiles.wccnet.edu/Curriculum%20&%20Assessment/web/Articulation%20Agreements/College%20Articulation/EMU%20Social%20Work%20BSW.pdf>

For the entire list of articulation agreements:

<http://www.wccnet.edu/curriculum/articulation/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 Eastern Michigan University as outlined on the Articulation Agreement.	0

Minimum Credits Required for the Program: 73

Program Information Report

Information Systems: Program in C++/EMU Computer Information Systems BBA (TR01I1ISPC) Associate Degree/3+1 Transfer

Program Effective Term: Fall 2020

This program prepares students to transfer to Eastern Michigan University 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. Students should check with an advisor for information on transferring.

Articulation:

Eastern Michigan University, Computer Information Systems BBA

<http://webfiles.wccnet.edu/Curriculum%20&%20Assessment/web/Articulation%20Agreements/College%20Articulation/EMU%20Computer%20Information%20Systems%20BBA.pdf>

For the entire list of articulation agreements:

<http://www.wccnet.edu/curriculum/articulation/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

Program Information Report

Liberal Arts Transfer/EMU Communication Major BS (TR01O2LAT)

Associate Degree/3+1 Transfer

Program Effective Term: Fall 2020

This program prepares students for transfer to a bachelor of arts or science degree program at Eastern Michigan University, where they will further improve their communication and interpersonal skills in personal, professional and public contexts. Students should check with an advisor for information on transferring.

Articulation:

Eastern Michigan University, Communication Major, BA or BS

<http://webfiles.wccnet.edu/Curriculum%20&%20Assessment/web/Articulation%20Agreements/College%20Articulation/EMU%20Communication%20or%20Communication%20Media%20and%20Theatre%20Arts%20BA%20or%20BS.pdf>

For the entire list of articulation agreements

<http://www.wccnet.edu/curriculum/articulation/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

Liberal Arts Transfer/EMU Communication, Media and Theatre Major BS (TR01O4LAT)

Associate Degree/3+1 Transfer

Program Effective Term: Fall 2020

This program prepares students for transfer to a bachelor of arts or science degree program at Eastern Michigan University, where they will further improve their skills in communication, media and theatre arts. Students should check with an advisor for information on transferring.

Articulation:

Eastern Michigan University, Communication, Media and Theatre Arts Major, BA or BS

<http://webfiles.wccnet.edu/Curriculum%20&%20Assessment/web/Articulation%20Agreements/College%20Articulation/EMU%20Communication%20or%20Communication%20Media%20and%20Theatre%20Arts%20BA%20or%20BS.pdf>

For the entire list of articulation agreements:

<http://www.wccnet.edu/curriculum/articulation/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

Management/EMU Business Administration BBA (TR01B5MNGD)

Associate Degree/3+1 Transfer

Program Effective Term: Fall 2020

This program prepares students for transfer to a bachelor's of business administration degree program at 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. Students should check with an advisor for information on transferring.

Articulation:

Eastern Michigan University, Business Major (approved) BBA

<http://webfiles.wccnet.edu/Curriculum%20&%20Assessment/web/Articulation%20Agreements/College%20Articulation/EMU%20Business%20Major%20BBA%20-%20Management%20AAS.pdf>

For the entire list of articulation agreements:

<http://www.wccnet.edu/curriculum/articulation/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

Program Information Report

Mechatronics/EMU Technology Management BS (TR01M1METR)

Associate Degree/3+1 Transfer

Program Effective Term: Fall 2020

The Technology Management degree program at Eastern Michigan University 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 and leadership in a variety of fields. Students should check with an advisor for information on transferring.

Articulation:

Eastern Michigan University, Technology Management BS

<http://webfiles.wccnet.edu/Curriculum%20&%20Assessment/web/Articulation%20Agreements/College%20Articulation/EMU%20Technology%20Management%20BS.pdf>

For the entire list of articulation agreements:

<http://www.wccnet.edu/curriculum/articulation/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

Nursing, Registered/EMU BSN Completion (TR01N1NURS)

Associate Degree/3+1 Transfer

Program Effective Term: Fall 2020

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. Students should check with an advisor for information on transferring.

Articulation:

Eastern Michigan University, Nursing Completion BSN

<http://webfiles.wccnet.edu/Curriculum%20&%20Assessment/web/Articulation%20Agreements/College%20Articulation/EMU%20Nursing%20BSN%20Completion.pdf>

For the entire list of articulation agreements:

<http://www.wccnet.edu/curriculum/articulation/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

Nursing, Registered/EMU Technology Management BS (TR01N2NURS)

Associate Degree/3+1 Transfer

Program Effective Term: Fall 2020

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. Students should check with an advisor for information on transferring.

Articulation:

Eastern Michigan University, Technology Management BS

<http://webfiles.wccnet.edu/Curriculum%20&%20Assessment/web/Articulation%20Agreements/College%20Articulation/EMU%20Technology%20Management%20BS.pdf>

For the entire list of articulation agreements:

<http://www.wccnet.edu/curriculum/articulation/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

Occupational Studies/EMU Technology Management BS (TR01O1OST)

Associate Degree/3+1 Transfer

Program Effective Term: Fall 2020

The Technology Management degree program at Eastern Michigan University 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. Students should check with an advisor for information on transferring.

Articulation:

Eastern Michigan University, Technology Management BS

<http://webfiles.wccnet.edu/Curriculum%20&%20Assessment/web/Articulation%20Agreements/College%20Articulation/EMU%20Technology%20Management%20BS.pdf>

For the entire list of articulation agreements:

<http://www.wccnet.edu/curriculum/articulation/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 Eastern Michigan University as outlined on the Articulation Agreement.	0

Minimum Credits Required for the Program: 94

Program Information Report

Paralegal Studies/Pre-Law/EMU Paralegal BS (TR01J1PSPL)

Associate Degree/3+1 Transfer

Program Effective Term: Fall 2020

This program prepares students to transfer to a bachelor of science program in Paralegal. The four-year degree prepares students for a diverse set of career options. Students should check with an advisor for information on transferring.

Articulation:

Eastern Michigan University, Paralegal BS

<http://webfiles.wccnet.edu/Curriculum%20&%20Assessment/web/Articulation%20Agreements/College%20Articulation/EMU%20Paralegal%20Studies%20BS%20-%20AA%20in%20Paralegal%20Studies%20-%20Pre-Law.pdf>

For the entire list of articulation agreements:

<http://www.wccnet.edu/curriculum/articulation/levelone/colleges/>

Requirements	(79 credits)
Complete a maximum of seventy-nine credits at Washtenaw Community College as outlined on the Articulation Agreement.	79
Complete a minimum of forty-two credits at Eastern Michigan University as outlined on the Articulation Agreement.	0

Minimum Credits Required for the Program: 79

Program Information Report

Physical Therapist Assistant/EMU Health Administration BS (TR01T1PTA)

Associate Degree/3+1 Transfer

Program Effective Term: Fall 2020

This program prepares students for transfer to a health administration 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. Students should check with an advisor for information on transferring.

Articulation:

Eastern Michigan University, Health Administration BS

<http://webfiles.wccnet.edu/Curriculum%20&%20Assessment/web/Articulation%20Agreements/College%20Articulation/EMU%20Health%20Administration%20BS.pdf>

For the entire list of articulation agreements:

<http://www.wccnet.edu/curriculum/articulation/levelone/colleges/>

Requirements	(78 credits)
Complete a maximum of seventy-eight credits at Washtenaw Community College as outlined on the Articulation Agreement.	78
Complete a minimum of forty-six credits at Eastern Michigan University as outlined on the Articulation Agreement.	0

Minimum Credits Required for the Program: 78

Program Information Report

Powertrain Development Technician/EMU Technology Management BS (TR0107PDT)

Associate Degree/3+1 Transfer

Program Effective Term: Fall 2020

The Technology Management degree program at Eastern Michigan University 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 and leadership in a variety of fields. Students should check with an advisor for information on transferring.

Articulation:

Eastern Michigan University, Technology Management BS

<http://webfiles.wccnet.edu/Curriculum%20&%20Assessment/web/Articulation%20Agreements/College%20Articulation/EMU%20Technology%20Management%20BS.pdf>

For the entire list of articulation agreements:

<http://www.wccnet.edu/curriculum/articulation/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

Radiography/EMU Health Administration BS (TR01R1RAD)

Associate Degree/3+1 Transfer

Program Effective Term: Fall 2020

This program prepares students for transfer to a bachelor's of science degree program in health administration 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. Students should check with an advisor for information on transferring.

Articulation:

Eastern Michigan University, Health Administration BS

<http://webfiles.wccnet.edu/Curriculum%20&%20Assessment/web/Articulation%20Agreements/College%20Articulation/EMU%20Health%20Administration%20BS.pdf>

For the entire list of articulation agreements:

<http://www.wccnet.edu/curriculum/articulation/levelone/colleges/>

Requirements	(78 credits)
Complete a maximum of seventy-eight credits at Washtenaw Community College as outlined on the Articulation Agreement.	78
Complete a minimum of forty-six credits at Eastern Michigan University as outlined on the Articulation Agreement.	0

Minimum Credits Required for the Program: 78

Program Information Report

Radiography/EMU Technology Management BS (TR01R2RAD)

Associate Degree/3+1 Transfer

Program Effective Term: Fall 2020

This program is designed for students who are interested in Eastern Michigan University's Technology Management degree program. The curriculum provides the necessary foundation to meet the changing needs of management in the health field. Students should check with an advisor for information on transferring.

Articulation:

Eastern Michigan University, Technology Management BS

<http://webfiles.wccnet.edu/Curriculum%20&%20Assessment/web/Articulation%20Agreements/College%20Articulation/EMU%20Technology%20Management%20BS.pdf>

For the entire list of articulation agreements:

<http://www.wccnet.edu/curriculum/articulation/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

Retail Management/EMU BBA with any Business Major (TR01B9RM)

Associate Degree/3+1 Transfer

Program Effective Term: Fall 2020

This program prepares students for transfer to a bachelor of business administration degree program at 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. Students should check with an advisor for information on transferring.

Articulation:

Eastern Michigan University, Business Major (approved) BBA

<http://webfiles.wccnet.edu/Curriculum%20&%20Assessment/web/Articulation%20Agreements/College%20Articulation/EMU%20Business%20Major%20BBA%20-%20Retail%20Management%20AAS.pdf>

For the entire list of articulation agreements:

<http://www.wccnet.edu/curriculum/articulation/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

Program Information Report

Supply Chain Management/EMU Business Administration BBA (TR01B4SCM)

Associate Degree/3+1 Transfer

Program Effective Term: Fall 2020

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 business. Students should check with an advisor for information on transferring.

Articulation:

Eastern Michigan University, Business Major (approved) BBA

<http://webfiles.wccnet.edu/Curriculum%20&%20Assessment/web/Articulation%20Agreements/College%20Articulation/EMU%20Business%20Major%20BBA%20-%20Supply%20Chain%20Management%20AAS.pdf>

For the entire list of articulation agreements:

<http://www.wccnet.edu/curriculum/articulation/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

Program Information Report

**Web Design and Development/EMU Communication Technology BS (TR01V1WDDD)
Associate Degree/3+1 Transfer**

Program Effective Term: Fall 2020

High Demand Occupation High Skill Occupation High Wage Occupation

This program prepares students for transfer to a bachelor's of communication technology degree program at Eastern Michigan University, where they will further their web design or development coursework. Students should check with an advisor for information on transferring.

Articulation:

Eastern Michigan University, Communication Technology, BS

<http://webfiles.wccnet.edu/Curriculum%20&%20Assessment/web/Articulation%20Agreements/College%20Articulation/EMU%20Communication%20Technology%20BS.pdf>

For the entire list of articulation agreements:

<http://www.wccnet.edu/curriculum/articulation/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-eight credits at Eastern Michigan University as outlined on the Articulation Agreement.	0

Minimum Credits Required for the Program: 86

Program Information Report

Welding Technology/EMU Technology Management BS (TR01W4WLDF)

Associate Degree/3+1 Transfer

Program Effective Term: Fall 2020

This program prepares students to transfer to a bachelor of science program in Technology Management at Eastern Michigan University. Students will apply welding skills to the industrial and technical environments. Students should check with an advisor for information on transferring.

Articulation:

Eastern Michigan University, Technology Management BS

<http://webfiles.wccnet.edu/Curriculum%20&%20Assessment/web/Articulation%20Agreements/College%20Articulation/EMU%20Technology%20Management%20BS.pdf>

For the entire list of articulation agreements:

<http://www.wccnet.edu/curriculum/articulation/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

Alphabetical by Description of Subject Code

ACS	Academic Skills
ACC	Accounting
ANI	Animation
ANT	Anthropology
ARB	Arabic
ART	Art
AST	Astronomy
AUD	Audio
ABR	Auto Body Repair
ASV	Auto Services
ATT	Automotive & Transportation Tech
BIO	Biology
BAC	Bricklayers & Allied Craftworkers
BMG	Business Management
BOS	Business Office Systems
CEM	Chemistry
CCP	Child Care Professional
CHN	Chinese
CRT	Collision Repair Technician
COM	Communications
CIS	Computer Information Systems
CNT	Computer Networking Technology
CPS	Computer Science
CSS	Computer Systems Security
CST	Computer Systems Technology
CMG	Construction Management
COR	Correctional Science
CJT	Criminal Justice
CUL	Culinary Arts
CCC	Custom Cars and Concepts
DAN	Dance
DEN	Dental Assisting
DRA	Drama
ECO	Economics
EWA	Electrical Worker Apprentice
ELE	Electricity/Electronics
EGT	Engineering Technology
ENG	English
ESL	English as Second Language
ENV	Environmental Science
FMA	Facility Management
FLM	Film Studies
FLP	Fluid Power
FRN	French
GEO	Geography
GLG	Geology

GRM	German
GDT	Graphic Design Technology
HSC	Health Science
HVA	Heating, Ventilation, Air Conditioning and Refrigeration
HST	History
HSW	Human Services Worker
HUM	Humanities
IWA	International Association of Iron Workers
IWT	Ironworker Instructor Training
JRN	Journalism
MTT	Machine Tool Technology
MRI	Magnetic Resonance Imaging
MTH	Mathematics
MEC	Mechatronics
MED	Medical Assisting
MBC	Medical Billing and Coding
MST	Motorcycle Service Technology
MUS	Music
NCT	Numerical Control
NUR	Nursing
PHL	Philosophy
PHO	Photography
PEA	Physical Education Activities
PTA	Physical Therapist Assistant
PHY	Physics
PLS	Political Science
PSY	Psychology
RAD	Radiography
CON	Residential Construction Technology
ROB	Robotics
SCI	Sciences
SOC	Sociology
SPN	Spanish
SUR	Surgical Technology
TAX	Tax
TRL	Trade Related Learning
UAS	Union Approved Supervision
UAF	United Association Pipefitters
UAP	United Association Plumbers
UAE	United Association Service Technicians
UAR	United Association Sprinkler Fitters
UAT	United Association Training
VID	Video Production
WEB	Web Design and Development
WAF	Welding and Fabrication
YOG	Yoga

Alphabetical by Description of Subject Code

ACS	Academic Skills
ACC	Accounting
ANI	Animation
ANT	Anthropology
ARB	Arabic
ART	Art
AST	Astronomy
AUD	Audio
ABR	Auto Body Repair
ASV	Auto Services
ATT	Automotive & Transportation Tech
BIO	Biology
BAC	Bricklayers & Allied Craftworkers
BMG	Business Management
BOS	Business Office Systems
CEM	Chemistry
CCP	Child Care Professional
CHN	Chinese
CRT	Collision Repair Technician
COM	Communications
CIS	Computer Information Systems
CNT	Computer Networking Technology
CPS	Computer Science
CSS	Computer Systems Security
CST	Computer Systems Technology
CMG	Construction Management
COR	Correctional Science
CJT	Criminal Justice
CUL	Culinary Arts
CCC	Custom Cars and Concepts
DAN	Dance
DEN	Dental Assisting
DRA	Drama
ECO	Economics
EWA	Electrical Worker Apprentice
ELE	Electricity/Electronics
EGT	Engineering Technology
ENG	English
ESL	English as Second Language
ENV	Environmental Science
FMA	Facility Management
FLM	Film Studies
FLP	Fluid Power
FRN	French
GEO	Geography
GLG	Geology

GRM	German
GDT	Graphic Design Technology
HSC	Health Science
HVA	Heating, Ventilation, Air Conditioning and Refrigeration
HST	History
HSW	Human Services Worker
HUM	Humanities
IWA	International Association of Iron Workers
IWT	Ironworker Instructor Training
JRN	Journalism
MTT	Machine Tool Technology
MRI	Magnetic Resonance Imaging
MTH	Mathematics
MEC	Mechatronics
MED	Medical Assisting
MBC	Medical Billing and Coding
MST	Motorcycle Service Technology
MUS	Music
NCT	Numerical Control
NUR	Nursing
PHL	Philosophy
PHO	Photography
PEA	Physical Education Activities
PTA	Physical Therapist Assistant
PHY	Physics
PLS	Political Science
PSY	Psychology
RAD	Radiography
CON	Residential Construction Technology
ROB	Robotics
SCI	Sciences
SOC	Sociology
SPN	Spanish
SUR	Surgical Technology
TAX	Tax
TRL	Trade Related Learning
UAS	Union Approved Supervision
UAF	United Association Pipefitters
UAP	United Association Plumbers
UAE	United Association Service Technicians
UAR	United Association Sprinkler Fitters
UAT	United Association Training
VID	Video Production
WEB	Web Design and Development
WAF	Welding and Fabrication
YOG	Yoga

New Courses with Full Approval

Year: 2020-21

Course	Title	Credit Hr(s)	Effective Term
BMG 163	Introduction to Esports	3	Fall 2020
BMG 165	Introduction to Sports and Entertainment Management	3	Fall 2020
BMG 166	Sports and Entertainment Communications and Public Relations	3	Fall 2020
BMG 168	Facilities and Event Management	3	Fall 2020
BMG 169	Sports and Entertainment Marketing	3	Fall 2020
BMG 231	Nonprofit Management	3	Fall 2020
CCP 225	Infant-Toddler: Critical Competencies for Working with Young Children	3	Fall 2020
CSS 225	Cybersecurity Operations - CCNA Cyber Ops	4	Fall 2020
CSS 285	Essentials of Automotive Penetration Testing	4	Fall 2020
UAT 135	Industrial Rigging Certification (UA 5011)	3	Fall 2020
UAT 150	Incorporating Pipe Pre-Fabrication into Apprenticeship (UA 5016)	1.5	Fall 2020
UAT 156	Commercial and Residential Boiler Service (UA 6063)	1.5	Fall 2020
UAT 157	Smart Home Technology (UA 6065)	1.5	Fall 2020
UAT 158	Pump Installation Service and Maintenance (UA 6017)	1.5	Fall 2020
UAT 159	Teaching HVACR Service Apprenticeship Curriculum (UA 6000)	1.5	Fall 2020
UAT 169	Mobile Technology (UA 3055)	1.5	Fall 2020
UAT 171C	Robotic Total Station-Trimble (UA 3033)	1.5	Fall 2020
UAT 173	BIM-VDC Workflow in the Construction Industry (UA 3100)	1.5	Fall 2020
UAT 174	Laser Scanning: Reality Capture for Construction (UA 3035)	1.5	Fall 2020
UAT 175	Utilizing Revit® for UA Training (UA 3095)	1.5	Fall 2020
UAT 178	Viking Foam Fire Protection System Training (UA 7002)	1.5	Fall 2020
UAT 179	Reliable Automatic Fire Sprinkler Valve Training (UA 7032)	1.5	Fall 2020
UAT 183	Revit for Fire Protection I (UA 7025)	1.5	Fall 2020
UAT 184	Revit for Fire Protection II (UA 7026)	1.5	Fall 2020
UAT 209	Methods in Teaching Backflow Prevention Certification (UA 4006)	3	Fall 2020
UAT 324	Industrial Rigging Technologies (UA 5009)	1.5	Fall 2020
WAF 110	Ironworker Pre-Apprenticeship Orientation and Safety	2	Fall 2020
WAF 119	Ironworker Pre-Apprenticeship Rigging and Cranes	2	Fall 2020
WAF 120	Ironworker Pre-Apprenticeship Print Reading and Contextualized Math	2	Fall 2020

New Courses Total: 29

New Courses Grand Total: 29

Discontinued Courses

Year: 2020-21

Course	Title	Credit Hr(s)	Effective Term
ACS 150	Acad. Skills - Health Sciences	1	Winter 2021
BMG 200	Relationship Skills in the Workplace	3	Fall 2020
CCP 113	Health, Safety and Nutrition for Child Care	3	Fall 2020
CMG 115	Safety and Employability Skills for Construction Trades	3	Fall 2020
CMG 145	Construction Plan Reading for the Trade	3	Fall 2020
CON 106	Contextualized Math for the Trades	3	Fall 2020
CON 180	Introduction to Green Building	3	Fall 2020
CON 193	Tools, Equipment and Material Handling for the Trade	3	Fall 2020
CON 247	Sustainable Building Practices	4	Fall 2020
GDT 107	InDesign	3	Fall 2020
GDT 151	Screen Printing	4	Fall 2020
MBC 161	Pathopharmacology for the MBC Professional	3	Fall 2020
MBC 255	Medical Coding Capstone	3	Fall 2020
MTH 181	Mathematical Analysis I	4	Fall 2020
PHL 123	Critical Thinking	3	Fall 2020
PHL 240	Social-Political Philosophy	3	Fall 2020
PHL 245	Philosophy of Religion	3	Fall 2020
PHT 106	Introduction to Pharmacy Technology	1	Fall 2020
PSY 270	Social Psychology and Global Applications	3	Fall 2020
WEB 100	Working in the Web Industry	2	Fall 2020
WEB 250	PHP and MySQL	4	Fall 2020

Discontinued Courses Total: 21

Discontinued Courses Grand Total: 21

Course Changes: Code, Title, and Credit Changes

Year: 2020-21 Effective Term: Fall 2020

WAS Course	Title	CR	IS NOW Course	Title	CR
Course Number Change					
ASV 252	Automatic Transmissions	2	ASV 266	Advanced Transmissions	2
ASV 253	Manual Drivetrain and Axles	2	ASV 266	Advanced Transmissions	2
CJT 154	Everyday Law I: Law and Civil Liberties	3	CJT 156	Everyday Law	4
CJT 155	Everyday Law II: Civil Law, Liabilities and You	3	CJT 156	Everyday Law	4
CJT 225	Seminar in Criminal Justice	3	CJT 144	Parole, Probation, and Community Corrections	3
WAF 115	Oxy-Fuel Gas Cutting and Welding for Ironworkers	4	WAF 114	Ironworker Pre-Apprenticeship Introduction to Welding	3

Course Title Changes					
AUD 175	Audio Recording Technology (Pro Tools Certification)	3	AUD 175	Digital Audio Workstations	3
BMG 279	Performance Management	3	BMG 279	Organizational Management	3
CPS 276	Web Programming Using Apache, MySQL, and PHP	4	CPS 276	Web Programming Using PHP and MySQL	4
MBC 210	Intermediate/Advanced ICD Coding	3	MBC 210	Intermediate/Advanced ICD-10 CM Coding	3
UAT 110	UA/MCA Foreman Certification	3	UAT 110	UA/MCAA Foreman Certification (UA 2012)	3
UAT 206	Improvement of Technical and Professional Relationship Skills for Supermarket Applications (UA 6002)	1.5	UAT 206	Commercial Refrigeration and Supermarket Applications (UA 6002)	1.5
UAT 225	Plumbing Fixtures	1.5	UAT 225	Plumbing Fixtures (UA 4003)	1.5
UAT 232	Drainage	1.5	UAT 232	Drainage Systems (UA 4002)	1.5
UAT 240	Applied Electrical Fundamentals	1.5	UAT 240	Basic Electricity (UA 2006)	1.5
UAT 243C	UA Pipe Trades Trailer Operations	1.5	UAT 243C	UA Pipe Trades Trailer Operations (UA 2011)	1.5
UAT 248	Valves	1.5	UAT 248	General Valve Repair (UA 5006)	1.5
UAT 249	Methods in Teaching Arc Welding	1.5	UAT 249	ARC Welding Practical Fundamentals and Theory (UA 8002)	1.5

Course Changes Continued

WAS Course	Title	CR	IS NOW Course	Title	CR
UAT 250	Advanced Applied Drawing	1.5	UAT 250	Advanced Plan Reading (UA 2005)	1.5
UAT 253	Copper Piping Systems	1.5	UAT 253	Installation, Design, and Operation of Copper Piping Systems (UA 4005)	1.5
UAT 259	Backflow Repair and Maintenance	1.5	UAT 259	Backflow Repair and Maintenance (UA 4007)	1.5
UAT 261	Thermoplastic Fusion	1.5	UAT 261	Heat Fusion Joining of Polyethylene Pipe (UA 5017)	1.5
UAT 262	Pipe Trades Advanced Drawing	1.5	UAT 262	Methods of Teaching Drawing Interpretation and Plan Reading (UA 2004)	1.5
UAT 266	Air and Water Balance	1.5	UAT 266	Methods in Teaching Start, Test, & Balance (UA 6009)	1.5
UAT 353	ASME Section IX Welding Code	1.5	UAT 353	ASME Section IX Welding Code (UA 8015)	1.5
WAF 116	Shielded Metal Arc Welding for Ironworkers	4	WAF 116	Ironworker Pre-Apprenticeship Shielded Metal Arc Welding	4
WAF 117	Flux Cored Arc Welding for Ironworkers	4	WAF 117	Ironworker Pre-Apprenticeship Flux Cored Arc Welding	4

**Course Information Report (Bulletin)
Active Courses****Academic and Career Skills****ACS****ACS 095 Student Success Seminar****3 credits****Level I Prerequisites:** Academic Reading Level 5; no minimum writing level
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students 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 105 Advanced Vocabulary**3 credits****Level I Prerequisites:** Academic Reading Level 5; Students with Academic Reading Level 3 may enroll in ACS 107 concurrently; no minimum writing level
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 students. Major areas of emphasis include vocabulary acquisition strategies, pronunciation skills, dictionary skills and idioms. Textbook and chapter book excerpts as well as articles from a variety of fields are read and discussed to provide practice for these skills.

ACS 107 College Reading and Learning Strategies**4 credits****Level I Prerequisites:** Academic Reading Level 3; no minimum writing level
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students will identify and develop the essential skills for academic success. Instructional units include the learning strategies essential 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 students' Academic Reading level to 5. The title of this course was previously College Reading and Study Skills.

ACS 108 Critical Reading and Thinking**4 credits****Level I Prerequisites:** Academic Reading Level 5; Academic Writing Level 3
60 lecture, 0 lab, 0 clinical, 0 other, 60 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. Successful completion of this course with a minimum grade of "C" will raise students' 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 and comprehension. 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

In this course, students will 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 3; 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 and 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 students who are undecided about a program of study or career goal or are contemplating a career change. Students complete exercises and vocational inventories to assess their interests, work values, skills, abilities, and personality preferences. 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.

ACS 150 Academic Skills for Health Sciences**1 credit****Level I Prerequisites:** Academic Reading and Writing Levels of 6; This course is for students in a Health Science Program.
15 lecture, 0 lab, 0 clinical, 0 other, 15 total contact hours

In this course, students in the Health Science programs will develop habits that enhance their academic success. Topics such as learning styles, study strategies, note-taking, test-taking, learning and memory techniques, textbook reading strategies, writing strategies, organizational skills and time management techniques will be explored.

ACS 151 Student Success: In and Beyond the Classroom**2 credits****Level I Prerequisites:** No Basic Skills**30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours**

In this course, students develop skills and habits that lead to academic, professional, and personal success. Through readings, activities, and journal writing, students will improve personal responsibility, self-motivation, self-management, interdependence, self-awareness, emotional intelligence, lifelong learning and self-esteem. Students will also learn how to research and prepare for a career, become more knowledgeable of careers, career alternatives and employment trends through the use of career and interest inventories, classroom activities and guest speakers. Specific sections designed for military veterans.

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 2 or higher**30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours**

In this course, students study 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 completion of 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**

In this introductory course, students learn accounting principles and theory with emphasis on the accounting cycle, recording and valuation of assets, liabilities and stockholders' equity, 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 liabilities.

ACC 122 Principles of Accounting II**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; ACC 111**45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours**

In this course, students continue their study of accounting including corporations, financial analysis, an introduction to managerial accounting and capital investment decisions. Students learn how to identify financial accounting information pertaining to corporations, evaluate a company's performance and forecast future performance.

ACC 131 QuickBooks Software**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 is an introductory course in the application of basic accounting knowledge and theory in QuickBooks software. The course content includes sales, invoicing and receivables, payables and purchases, inventory, payroll, general accounting, financial statements and end-of-period procedures for a service and retail business. This course builds upon knowledge of bookkeeping principles. Upon successful completion of the course, students may choose to take the QuickBooks exam required to become certified as a QuickBooks Certified User (QBCU).

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 I**3 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; Academic Math Level 4 or MTH 125 or any math level 4 or higher course with a minimum grade of "C"; ACC 122, minimum grade "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 current and non-current assets.

ACC 214 Intermediate Accounting II**3 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; Academic Math Level 4 or MTH 125 or any math level 4 or higher course with a minimum grade of "C"; ACC 213, minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This course is a continuation of Intermediate Accounting I. Students will study generally accepted accounting principles as they relate to financial statement presentation, and to the recording, valuation and disposition of liabilities and stockholders' equity. Evaluation of financial performance is also included.

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

In this course, students learn the 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.

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 Modeling & Production Pipeline**4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
60 lecture, 0 lab, 0 clinical, 30 other, 90 total contact hours

In this course, students will create custom digital 3D models and explore the 3D production pipeline from modeling to finished rendered imagery. A variety of modeling techniques and tools for both polygonal and NURBS modeling will be covered. Additionally, students will be introduced to texturing, lighting, animation, and rendering. Using professional industry-standard software, students will learn industry-specific vocabulary. The title of this course was previously Animation I: Modeling.

ANI 155 Textures and Studio Lighting for 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

In this course, students will use industry standard software to texture 3D models. Students will learn to create virtual lighting setups and cameras. Common and advanced software rendering engines will also be explored.

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 180 Introduction to Game Level Design**4 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; ANI 150 minimum grade "C"
60 lecture, 0 lab, 0 clinical, 30 other, 90 total contact hours

In this course, students will learn to use industry standard game design software to create basic gameplay levels using premade assets. This will involve placing and editing assets and interactive triggers within a level and packaging levels properly for successful export. Throughout this course, students will develop a modular design approach that is critical for intelligent and efficient game design.

ANI 190 History of Game 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

In this course, students will learn about the theory of game design and its history. Using historical examples, students will study the evolution of game design, different genres of video games, and the evolution of video game-related technology.

ANI 230 Motion and Sound**2 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; ANI 145 and ANI 150; GDT 108 minimum grade "C"
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

In this course, students focus 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 235 Introduction to Compositing and Visual Effects**4 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; ANI 150 minimum grade "C"
30 lecture, 0 lab, 0 clinical, 60 other, 90 total contact hours

In this course, students will be introduced to the basics of compositing as used in animation. Students will use various software to combine different elements into a single image or series of images. These elements may include 2-dimensional images, 3-dimensional images, backgrounds, lighting as well as special effects such as fire, smoke, and fog. Students will also animate basic visual effects using various dynamic systems.

ANI 240 Advanced Game Level Design**4 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; ANI 180 minimum grade "C"
60 lecture, 0 lab, 0 clinical, 30 other, 90 total contact hours

In this course, students will build on game level construction skills. Students will import original, custom-made assets to build effective levels. They will learn to add atmospherics, foliage, and dynamic forces. Students will also learn to create in-game cinematics.

ANI 250 Organic Modeling and Rigging**4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; ANI 145 and ANI 150, minimum grade "C"
60 lecture, 0 lab, 0 clinical, 30 other, 90 total contact hours

In this course, students will use advanced modeling and setup tools to create advanced organic models. Students will rig, texture, bind, and animate characters using a variety of industry-standard techniques. Advanced NURBS modeling and dynamic rigid body animation will also be explored. The title of this course was previously 3D Animation II.

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

In this course, students 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 biocultural perspective. Major areas of coverage include evolutionary theory, human genetics, human variation, adaptive and developmental responses to stress, primate studies, primate and hominin evolution, hominin fossil record, and prehistoric archaeological evidence for cultural evolution.

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. Students will explore the basic goals of archaeology, archaeological methods and techniques used to research the material record of past human behavior, core anthropological theories used to explain human evolution and socio-cultural change and survey of the development of socially and politically complex human societies through time.

ANT 265 Introduction to Forensic 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

In this course, students will explore the role of the Forensic Anthropologist, the methods used to interpret dental and skeletal data, and the legal implications of applying scientific scrutiny to death investigation. The application of scientific methods in the investigation of homicides, mass disasters, and human rights cases means that the Forensic Anthropologist plays a crucial role in the analysis of evidence and the communication of these results to members of law enforcement.

ANT 290 International Studies in Anthropology**3 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; consent required
15 lecture, 60 lab, 0 clinical, 0 other, 75 total contact hours

This course will offer students the opportunity to study anthropology abroad. Students will focus on a particular sub-field of Anthropology (cultural, archaeology, bioarchaeology, primatology) at an international location and will involve both classroom and hands-on learning opportunities. The classroom component of the course will involve 1-2 weeks of lecture and/or labs before travel commences. The hands-on component of the course will involve travel abroad that includes cultural immersion, visits to relevant museums and landmarks, and hands-on participation at a fieldwork site. The course will be offered either as a stand alone Anthropology course or in conjunction with HST 290.

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

In this course, students are introduced to a number of media and practices in studio art. Studies 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

In this course, students will explore aspects of color (such as hue, saturation and value) based on the color theories of Josef Albers, Albert Henry Munsell and others. Students create studies based on color relativity, space and transparencies of color, and the value of color. Students also apply colors based on economy usage and the Bezold effect.

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

In this studio class, students 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 the 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

In this course, students are introduced to freehand drawing. Accurate representational drawing is emphasized through a series of projects concentrating on simple objects and the use of space. Students are introduced to and will discuss the central problems and issues of freehand drawing. The course is recommended as a beginning level course before other art courses at WCC are taken and 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

In this studio course, students will use everyday materials to explore two-dimensional black/white and color designs. Using surface alteration, collage and drawing techniques, students will develop non-objective (abstract) compositions. Students learn to make careful observations, think critically, and find independent solutions, which are foundational skills for future careers in visual arts industries.

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; Academic Math Level 2
30 lecture, 60 lab, 0 clinical, 90 other, 90 total contact hours

In this studio class, students will be guided through a series of projects in clay. Students will learn the different aspects of the ceramic process and develop a specific set of skills for manipulating and firing clay. Students will also develop an understanding of the relationship between ceramic art and culture. 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, 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, 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, 90 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. Students will focus on the use of volumes and space with attention to the two dimensional picture plane. Additional attention will be paid to utilizing the interaction of figures and the course in which color a part of the composition. 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 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

In this course, students will learn about discoveries concerning planets beyond the Solar System (exoplanets) and the evolution of the Universe (cosmology). Students will likewise be introduced to interesting resources such as NASA's Planet Hunters citizen science project, the Hubble Space Telescope archive and advanced smartphone apps that chart constellations and the night-sky in real-time. Students will also develop skills pertinent to carrying out laboratory work, scientific research, basic arithmetic and visual exercises tied to astronomy.

Audio**AUD****AUD 170 Introduction to Audio Technology****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 general introduction and survey of audio recording careers, software recording platforms, audio hardware, acoustics/principles of sound and music recording and general applications in computer-aided recording. Students will learn to do a critical analysis of their strengths and weaknesses against the requirements for building a profession in the music and audio/sound recording and music production fields. The title of this course was previously Computer Applications in Music. This course was previously MUS 170.

AUD 175 Digital Audio Workstations**3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; AUD 170 minimum grade "C", may not enroll concurrently
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students will be introduced to digital audio workstations using the nationally recognized Avid Pro Tools audio production software. Students will learn basic navigation and workflows used in the Avid Pro Tools system. This is the first course in a two course series that prepares students to take the Avid Pro Tools online exam for certification. This course was previously MUS 175 Audio Recording Technology (Pro Tools Certification).

AUD 245 Composition and Arranging for Keyboard**2 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; AUD 175 minimum grade "C"
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

In this course, students will be introduced to basic keyboard skills as related to composing music in diverse genres. Students will also learn basic use of virtual instruments and keyboard in arranging and layering for rhythm section (guitar, bass guitar, drums, piano and keyboards). It is recommended that students have access to a piano or keyboard outside of the classroom. The title of this course was previously Music Producing and Arranging. This course was previously MUS 245.

AUD 248 Introduction to Live Sound**3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; AUD 170 minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students will be introduced to the components and usage of portable sound systems for live events. Students will be required to practice sound setup and application of course skills in one or more live performances outside of class. This course may be beneficial for artists and event managers who want to gain a basic understanding of sound systems or those wishing to pursue a career in live sound. The title of this course was previously Sound Reinforcement for Stage. This course was previously MUS 248.

AUD 275 Advanced Audio Recording Technology**3 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; AUD 175 minimum grade "C"
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 progressive recording and mixing techniques to solo instrumental, small group and multi-track recordings. Students will learn microphone usage techniques, signal processors and effects, as they apply to industry-standard recording of audio. The title of this course was previously Audio Recording Technology II. This course was previously MUS 275.

AUD 286 Music/Audio Project and Portfolio Production**3 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; AUD 275 minimum grade "C"
30 lecture, 30 lab, 0 clinical, 0 other, 60 total contact hours

In this capstone class, students will complete, mix and master an array of projects determined by their career goals. Students will take part in special projects with clients as a way to foster professional skill-sets needed in all music/audio production fields. This course was previously MUS 286.

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 introduced to the automotive finishing process and provided with hands-on training for body panel repair and alignment, plastic welding and MIG welding.

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

In this entry level, self-paced course, beginning painters build their knowledge for a career in the automotive refinishing industry. Students will be exposed to today's industry standard methods, such as 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 industry safety procedures.

ABR 113 Estimating and Shop Operations**4 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; Academic Math Level 2; ABR 111 and ABR 112
60 lecture, 45 lab, 0 clinical, 0 other, 105 total contact hours

In this course, students 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, calculation 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
30 lecture, 22.5 lab, 0 clinical, 0 other, 52.5 total contact hours

In this course, 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 butt, lap, and plug welds completed in various welding positions. Students 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, 22.5 lab, 0 clinical, 0 other, 52.5 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 ensure that they move in the desired direction when worked. Areas of study will include sheet metal shaping using hand tools over wood forms, anvils, and sand/shot bags. Students will create several handmade parts using a variety 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 automotive mechanical, electrical and body component repair issues required to restore vehicle collision damage to pre-accident condition.

ABR 140 Aluminum Welding for Automotive Applications**4 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; ABR 114 minimum grade "B-"
45 lecture, 60 lab, 0 clinical, 0 other, 105 total contact hours

In this course, students develop skills and techniques associated with the cosmetic and structural repair of modern collision-damaged vehicles. Students are introduced to the welding process and equipment used to weld aluminum panels and coupons of varying thickness. Safe welding techniques, site preparation, tool choice and other I-CAR (Inter-Industry Conference on Auto Collision Repair) and NATEF rules will be covered.

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 201 Lightweighting Composite Repair**4 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; ABR 123 minimum grade "B-" or ASV 131 minimum grade "C"
45 lecture, 60 lab, 0 clinical, 0 other, 105 total contact hours

In this course, students learn about composite materials and their uses in modern vehicles. Students are introduced to material types (such as resins with reinforcing carbon fiber) and their construction uses, specialty equipment, and the importance of vacuum bagging. Students develop and execute repair plans using composite materials and make molds as part of the "light-weighting" and repair process.

ABR 209 Advanced Metal Shaping**2 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; ABR 119 minimum grade "B-"
30 lecture, 22.5 lab, 0 clinical, 0 other, 52.5 total contact hours

In this course, students will work individually and as a team to complete projects made from various types of metal. Areas of study will include: sheet metal shaping with hand and power tools over wooden "bucks," and layout of multi-piece projects through the use of cardboard templates, then transferred to metal. Procedures used in this class will consist of riveting, bell flanging, welding, English wheel and many others.

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 130 Automotive Maintenance****4 credits**

Level I Prerequisites: Academic Reading Level 5; Academic Writing Level 3
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. In addition to basic maintenance, students will learn about fluids and lubrication services as well as cooling and exhaust system repairs. Students will also be introduced to steering, suspension, and brake repairs in the lab.

ASV 131 Automotive Electrical**4 credits**

Level I Prerequisites: Academic Reading Level 5; Academic Writing Level 3
45 lecture, 60 lab, 0 clinical, 0 other, 105 total contact hours

In this course, students will learn basic electrical theory, use and interpretation of automotive wiring diagrams, and use of electrical testing equipment. Students will learn the skills needed to diagnose and replace a number of commonly serviced electrical components. The focus of this course allows students to gain practical experience in the laboratory.

ASV 132 Automotive Engines**4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; ASV 130, ASV 131 or MST 110, minimum grade "C"
45 lecture, 60 lab, 0 clinical, 0 other, 105 total contact hours

In this course, students explore the theory, operation and repair of automotive gasoline engines with emphasis on component identification, operation and proper measurement techniques. Students gain skills such as disassembly, assembly and running procedures with automotive drivetrains on test stands and also develop practical skills with on-car diagnostics and repairs.

ASV 133 Automotive Fuel Systems**4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; ASV 131 minimum grade "C"
45 lecture, 60 lab, 0 clinical, 0 other, 105 total contact hours

In this course, students will be introduced to the theory and operation of fuel delivery and emissions systems and their components. Using specialized diagnostic test equipment, students will develop skills to inspect, diagnose, and perform services on fuel delivery and emission systems. Safe component replacement and repair procedures will also be covered. The title of this course was previously Automotive Fuel.

ASV 134 Automotive Transmissions**4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; ASV 130 minimum grade "C"
45 lecture, 60 lab, 0 clinical, 0 other, 105 total contact hours

In this course, students will learn the theory and operation of automatic and manual drivetrain systems. Topics include the basic diagnosis and repair of automatic transmissions and major drivetrain components. Students will be introduced to 4-wheel drive systems. Upon successful completion, students will be able to service automatic transmission components as well as diagnose and replace manual drivetrain components. The focus of this course allows students to gain practical experience in the laboratory.

ASV 135 Facility Operations**3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 30 lab, 0 clinical, 0 other, 75 total contact hours

In this course, students will learn the skills needed to execute transactions in automotive technical and service environments. Students will learn about safety topics that pertain to working in the automotive industry and gain knowledge about mechanic and repair facility licensing requirements. This course contains material previously taught in ASV 157.

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 132 minimum grade "C"
30 lecture, 22.5 lab, 0 clinical, 0 other, 52.5 total contact hours

In this course, students will learn how to diagnose and repair automotive engine mechanical systems. The focus will involve the use of industry approved techniques and various skills in assessing engine condition before performing repairs. This course was previously ASV 241.

ASV 252 Automatic Transmissions**2 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; ASV 134 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 134 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 130 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 130 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, including hydraulic, mechanical, and electrical component systems. Additional topics include diagnosis and repair of anti-lock brake, stability and traction control systems.

ASV 256 Electrical and Electronic Systems**4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; ASV 131 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.

ASV 257 Heating and Air Conditioning Systems**2 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; ASV 130 minimum grade "C"
30 lecture, 22.5 lab, 0 clinical, 0 other, 52.5 total contact hours

In this course, students will explore automotive heating and air conditioning (A/C) systems, including servicing procedures and diagnostic techniques. Students will perform A/C system diagnosis and repair with a focus on the multiple types of control systems used in current automobiles. This course also covers the proper use, recovery, and recycling of current refrigerants.

ASV 258 Engine Drivability**2 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; ASV 131 or ASV 133, minimum grade "C"
30 lecture, 22.5 lab, 0 clinical, 0 other, 52.5 total contact hours

In this course, students will develop automotive troubleshooting and repair strategies for engine management systems. Using specialized automotive test equipment, the student will learn how to analyze fuel, ignition and emission systems. Inspection procedures and diagnostics of powertrain control module (PCM) fault code symptoms will be covered.

ASV 266 Advanced Transmissions**2 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; ASV 134 minimum grade "C"
30 lecture, 22.5 lab, 0 clinical, 0 other, 52.5 total contact hours

In this course, students will learn how to inspect, diagnose, and repair late-model automotive drivetrain systems. Students will learn how to diagnose and repair manual and automatic transmissions/transaxles, transfer cases, and differentials/axles. Upon successful completion, students will be able to conduct advanced in-vehicle diagnosis on all components of the drivetrain system, and repair as necessary. The drivetrain components will focus on advancing technologies and tooling representative of manufacturer trends.

ASV 269 Performance Automotive**4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; ASV 130, ASV 131, ASV 132, and ASV 133, minimum grade "C"
45 lecture, 60 lab, 0 clinical, 0 other, 105 total contact hours

Students taking this course will continue to develop skills and gain valuable information as it relates to the completion and management of a vehicle project. Areas of study include drivetrain, electrical systems, suspension, brakes, steering and final safety inspections.

ASV 270 Automotive Test and Development**4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; ASV 131 and ASV 132, minimum grade "C"
60 lecture, 45 lab, 0 clinical, 0 other, 105 total contact hours

In this course, students will learn about the application of automotive testing systems used during the development of automobiles. Students will learn the principles of component testing. The focus of this course allows students to gain practical experience in the laboratory utilizing a mapping test stand that will analyze an engine assembly for defects. The students will enter engine defects and collect data using commonly accepted test procedures to validate the testing process.

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.

ASV 277 Automotive Powertrain Systems**4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; ASV 131 and ASV 132, minimum grade "C"
60 lecture, 45 lab, 0 clinical, 0 other, 105 total contact hours

In this course, students will learn about the use of a chassis roll dynamometer for testing and validation of powertrain systems. Students will learn the principles of dynamometer operation including safety systems, road cycle testing, emissions testing, and durability testing. Students also gain practical experience in the laboratory, and develop and execute a test sequence for horsepower, emissions testing, and fuel system testing.

ASV 279 Automotive Dynamometer and Test**4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; ASV 131 and ASV 132, minimum grade "C"
60 lecture, 45 lab, 0 clinical, 0 other, 105 total contact hours

In this course, students will learn about data acquisition methods used in modern automotive powertrain development. Students will learn the principles of strain gauge pressure sensors and Wheatstone bridge torque transducers. Students also gain practical experience in the laboratory, calibrating and validating the signals produced from a variety of automotive testing equipment. The students will develop and execute a test validation protocol on engine dynamometer stands.

Automotive Transportation Tech**ATT****ATT 203 Lightening Materials in Transportation****3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; WAF 105; WAF 139 or WAF 200; and MEC 101, minimum grade "C" for all courses
30 lecture, 45 lab, 0 clinical, 0 other, 75 total contact hours

In this course, students will learn about lightweighting in transportation vehicles. Materials such as advanced reinforced plastics, carbon fiber, and titanium alloys are discussed. Students will research the role of lightweighting materials in reduced vehicle emissions and reduced fuel consumption and gain practical experience in the laboratory by executing a design and manufacturing project plan using carbon fiber layup using compression molding techniques.

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

In this course, students will learn the basic principles and concepts of biological systems. Emphasis is placed on form and function, biological processes, diversity within and across taxonomic groups, and ecological interactions. Students will examine the fundamentals of biochemistry, cells, genetics, cellular energy, taxonomy, reproduction, evolution, ecology and sustainability. This course includes laboratory exercises designed to reinforce these concepts and their application to modern scientific research. BIO 101 serves as an introductory lab-based biology course for non-majors. Students requiring a full year of college biology should consider BIO 161 and BIO 162.

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

In this course, students will become familiar 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

In this course, students are introduced to 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. The relationships between physical activity, body composition, and health will be examined.

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 field study of biological systems and biodiversity. Students will explore the techniques and complexities of studying Michigan organisms and ecosystems in an outdoor setting. Topics will include wetland and river habitats, native trees, shrubs and wild flowers, fungi, animal diversity, and ecology. Several off-campus trips will enhance the field experience in addition to exploring the natural areas on campus. As part of this course, students will keep a semester-long field journal on a specific natural area of study.

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 or BIO 162, minimum grade "C"
45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

In this course, students are introduced to the essential elements of human anatomy and physiology. This course surveys the anatomy and physiology of all human body systems. The lab emphasizes those elements of human anatomy that are of special importance to medical fields including radiography and medical billing and coding. It is intended for students entering some programs in allied health. This course will not meet WCC's nursing or physical therapist assistant program admissions requirements.

BIO 110 Introduction to Exercise 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

In this course, students will be introduced to the field of exercise science. The areas of exercise physiology, motor control, biomechanics, athletic training, and exercise psychology 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 101 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 will be given an intensive, in-depth introduction to the structure and function of all the body systems. Course topics include the following systems: integumentary, skeletal, muscular, nervous, cardiovascular, immune, respiratory, urinary, digestive and reproductive. Emphasis is on basic physiological principles, interrelationships among systems, homeostatic mechanisms and introductory disease processes. The laboratory component provides a unique hands-on learning experience for exploration of human body systems with the use of prosected cadavers. In addition, students complete lab exercises to enhance their understanding of basic physiology.

BIO 142 Fundamentals of 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

In this course, students explore the relationship between nutrition and energy expenditures as they apply to body mass regulation. Students will be introduced to concepts such as nutrition, metabolism, and energy transfer, exercise energy utilization, and the bioenergetics of food and activity. Students will assess body composition such as body fat and lean mass. Concepts of obesity, weight control, modification of eating and exercise behaviors, diet practices and psychosocial aspects of weight control will be discussed. The physiologic considerations in total fitness such as strength, anaerobic and aerobic power will be covered. This course was previously titled Introduction to Nutrition, Exercise & Weight Control.

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

In this course, students are introduced 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 or high school chemistry or high school environmental science or BIO 101 or CEM 101 or ENV 101; minimum grade "C" all BIO, CEM, ENV and high school requirements
45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

In this course, biology majors are given 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, or high school chemistry, or high school environmental science or BIO 101 or CEM 101 or ENV 101; minimum grade "C" all BIO, CEM, ENV and high school requirements

45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

In this course for biology majors, students are provided 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. Basic concepts of development, ecology, evolution and sustainability issues will be covered. Students will read and discuss scientific literature, write two formal lab reports and 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 credit**

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. Included are experiences with enhanced review in anatomy and physiology.

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

In this course, students are introduced to 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 207 General Genetics**3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 4; BIO 161 or BIO 162, minimum grade "C", or AP BIO score of 4 or 5, or consent required

45 lecture, 0 lab, 0 clinical, 7.5 other, 52.5 total contact hours

In this course, students will explore the basic principles of genetics and their application to viruses, bacteria, plants, fungi, and animals, including humans. Classical and molecular genetic mechanisms are covered. Students who have taken one year of high school chemistry with a lab and earn a grade of "C" or better may have the college-level chemistry prerequisites waived.

BIO 208 Genetics**4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 4; BIO 161 or BIO 162, minimum grade "C", or AP BIO score of 4 or 5, or consent required

45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

In this course, students will explore 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 lab and earn a grade of "C" or better may have the college-level chemistry 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

In this course, students are provided with an in-depth introduction to the study of human disease as an alteration of normal anatomy and physiology. This course covers major topics in pathophysiology including etiology, pathogenesis, adaptation and common clinical aspects of disease.

BIO 215 Cell and Molecular Biology**4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; BIO 161 or BIO 162 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

In this course, students explore the smallest unit of living things, the cell, at the molecular and genetic level. A comparative cellular examination of the three domains of life (Archaea, Bacteria and Eukarya) 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" for all BIO and MTH requirements; BIO 111 and MTH 160 may enroll concurrently

30 lecture, 45 lab, 0 clinical, 0 other, 75 total contact hours

In this course, students will integrate and apply the principles learned in the prerequisite courses. Students will learn to evaluate the strengths and weaknesses of scientific research in the field of exercise science, gain practical experience and expertise with widely used measuring instruments of physical performance and body composition and may choose to take the 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, general biology, evolution, and environmental relationships of the major animal groups. Students study animals with an emphasis on comparative anatomy and physiology, taxonomy, evolution, 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, field work and dissection. This course will include a semester term paper based on formal observations at a zoological park.

BIO 237 Microbiology**4 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; BIO 101, BIO 111, BIO 161 or BIO 162, minimum grade "C"
45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

This course is an introduction to the structure and genetics of microbes that have a significant impact on humans. The epidemiology and prevention of infectious disease as well as events involved in immunity and pathogenesis within the body are covered. Finally, the course includes a survey of infectious diseases of major body systems. The lab is an introduction to basic microbiological skills with an emphasis on aseptic technique and scientific reasoning.

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 Craftworker, 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 designed for those who have aspirations of creating business opportunities, whether they are an inventor, artist or entrepreneur. Students will 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. Students will create and present (pitch) business plans.

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

In this general-survey course, students will study key topics in the business life cycle, including different business forms and common contractual issues. Sources of law, dispute resolution, business ethics, intellectual property, employment law, global issues, and bankruptcy will also be discussed. This course is appropriate for students intending to transfer.

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

In this course, students will develop insights into the functions, goals, and problems of modern businesses, large and small. In addition, the course covers the impact of consumer, governmental, and global forces on the free-enterprise system. A practical orientation of career opportunities available in business and industry is also provided.

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

In this course, students will explore 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. Other topics will include 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 163 Introduction to Esports**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 survey the burgeoning Esports industry. Topics such as video game types and genres, the history of the games and organizations that drive Esports, positions in the Esports industry, as well as practical advice for starting and managing Esports teams will be discussed.

BMG 165 Introduction to Sports and Entertainment 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 are introduced to the field of sports and entertainment management. Students will learn conceptual and practical approaches to successfully plan, organize, staff, and control a sports or entertainment operation. Structured and creative approaches to problem-solving will be explored. Students will discuss management concepts related to promotion, pricing strategies, and the sales process. Students will also explore career possibilities available in the sports and entertainment industries.

BMG 166 Sports and Entertainment Communications and Public 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

In this course, students will integrate communication principles that apply uniquely to the sports and entertainment industries with an emphasis on cultural diversity and ethical communication principles and processes. Strategic market segmentation; media outlets, ratings and shares; and budget and marketing constraints will be emphasized. Students will recognize the difference between interpersonal communication, mass communication and public relations.

BMG 168 Facilities and Event 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 are introduced to the three major components of facility management: event management, risk management and venue management. Students will also learn management principles related to the operation, planning and design of new or existing venues. This course also surveys the role of media and news and their impact on sports and entertainment management.

BMG 169 Sports and Entertainment Marketing**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

In this course, students explore marketing principles and resources for the sports and entertainment industries. Students will develop a fundamental knowledge of product elements and channels of distribution. In addition, students will discuss how increasing attendance in a venue is achieved by developing an understanding of the how, who, what and where of marketing.

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 181 Introduction to 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

In this course, students are provided with the foundational knowledge they will need to understand the world of supply chain and related core competencies. At the end of the course, students will be given the opportunity to earn nationally recognized certification for portfolio development. The course includes modules on the global supply chain, the logistics environment, safety, safe equipment operation, material handling equipment, quality control, workplace communication, teamwork and problem-solving using computers. This course contains material previously taught in BMG 180.

BMG 182 Warehousing and Logistics**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 provided with the mid-level technical knowledge needed to understand the world of supply chain and related core competencies. At the end of the course, students will be given the opportunity to earn nationally recognized certification for portfolio development. The course includes modules on product receiving and storage, order processing, packaging and shipment, inventory control, safe handling of hazardous materials, evaluation of transportation modes, customs, and dispatch and tracking operations. This course contains material previously taught in BMG 180.

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 and deliver engaging, memorable, and positive customer experiences that build customer loyalty, word-of-mouth customers, and in turn, organizational success. Students apply the core concepts to their daily work with a focus on enhancing the quality and consistency of all the interactions a customer/client has with the service provider. Finally, students refine their personal skills needed to be successful in the 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

In this course, students will learn the conceptual, theoretical and strategic framework of fundamental brick-and-mortar as well as online retail management principles coupled with the practical applications of retailing policies, methods and procedures. Topics covered include managing, marketing, selling, promoting and distributing retail goods and services. Students will learn to apply their understanding of the retailing environment 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

In this course, students will develop career-enhancing oral, written and non-verbal skills by studying the principles, processes and strategies underlying effective business communication. 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, persuasive, and negative news correspondence, in addition to 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-"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students who are operating a business or have a solid business model will learn, through the development of a business plan, how to build a solid foundation for running and growing their business. Students will also learn to present and pitch a business plan to entrepreneurial professionals. The focus of the course will be on the financial, marketing, and operational functions within a business needed for sustained growth and success.

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 and Logistics**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 transportation moves freight, information, and finances through the global supply chain. Since transportation expense often represents one of the largest single costs faced by a company, students learn how transportation strategy is created and implemented. Finally, they learn about the latest innovations, current security issues, and recent sustainability efforts in the freight transportation industry. The title of this course was previously Transportation Management.

BMG 228 Purchasing and Inventory 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

In this course, students will learn about the practices related to strategic and operational purchasing, buying, and supply management throughout the supply chain. A key component of the purchasing function is inventory control and management so students will also learn practices for determining product assortments, acquiring and replenishing stock, and reducing excessive inventory. Finally, students will learn to perform the business math calculations related to all aspects of purchasing and inventory control. This course contains material previously taught in BMG 211 and BMG 227.

BMG 230 Principles of 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 are introduced to the basic concepts and principles that managers use in daily activities to accomplish organizational goals. Students will learn conceptual and practical approaches to successfully 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. The title of this course was previously Management Skills.

BMG 231 Nonprofit 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 focus on the basics of nonprofit management. They will learn about the role of nonprofits in society, 501(c)(3) application and legal compliance, board governance, and nonprofit leadership and management. Students will develop nonprofit management skills.

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

In this course, students are introduced to essential human resources activities that must be managed in any organization. These activities include employee recruitment, selection, retention, compensation, job evaluation, performance management, safety, employee rights, and benefits. The course will be taught using a combination of lectures and experiential learning techniques such as discussions and case studies.

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 inferential statistics and their application to business decisions. Topics include one and two sample confidence intervals and hypothesis tests, ANOVA, chi-square tests, and simple and multiple regression. Emphasis is on the application of appropriate statistical methods and statistical software to analyze real-world 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

This course introduces students to a structured and logical approach to problem solving and decision making in business and supply chain situations. Students will have hands-on work using standard problem solving and decision-making tools, including the Excel data analysis tools. While gaining this extensive Excel hands-on experience, students also explore the challenges associated with data driven decision making.

BMG 279 Organizational 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 examine the theories, principles, and practices in organizational effectiveness, efficiency, and human resource development that drive high performance and continuous improvement in business today. Topics include job and organizational design, work attitudes and behavior, motivation, leadership, group dynamics, conflict, agreement, decision-making, power and politics. The course will be taught with a combination of lectures and experiential learning techniques so that students understand themselves and other people at work and learn how to create effective work groups to be successful in life. The title of this course was previously Performance Management.

BMG 285 Applied Data Analytics**4 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; BMG 265, BMG 275 and CIS 282, minimum grade "C"
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students will be introduced to the fundamental concepts of "Big Data" management and data science analytics, learning to recognize the challenges faced in dealing with massive volumes of available data as well as in proposing scalable solutions for them. This course is highly interactive, using case studies that span multiple vertical industries to process and analyze data related to common business issues. The title of this course was previously Meeting Management.

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 293 Business Enterprise Essentials Capstone**1 credit****Level I Prerequisites:** Academic Reading and Writing Levels of 6; consent required
15 lecture, 0 lab, 0 clinical, 0 other, 15 total contact hours

In this course, students will apply business skills to a case study of a current business problem. The students will define the business problem, acquire appropriate industry research, and apply critical thinking to make appropriate recommendations to resolve the defined problem.

BMG 295 Supply Chain Field Studies**2 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; BMG 181 and BMG 182 or BMG 206; minimum grade "C" all BMG requirements; may enroll concurrently
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

In this course, students will apply their knowledge of retail and supply chain management to research and explain, in detail, the role and contribution made by each entity in the supply chain for a retail-related product, or products from point-of-origin to point-of-consumption. The test and final report will integrate the concepts, principles and practices learned in prerequisite courses and will compare and contrast the supply chains of different and diverse retail products. 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, punctuation and symbol 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 type the number and symbol keys. Students are evaluated early in the course 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 and improve their technique on 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 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

In this course, students learn various word processing and document formatting techniques using Microsoft Word. Skills include formatting documents, creating tables, and inserting and formatting graphics. The application to Word processing concepts and functions to current business environments are stressed. Students should be familiar with Windows and have keyboarding skills of at least 25 wpm. Upon completion of this course, students may be eligible to take the Microsoft Office Word Certification Exam through Certiport, the premiere certification organization endorsed by Microsoft.

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 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 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 230 Electronic Forms 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**

In this course, students will learn how to create, edit and use electronic forms. Electronic forms are less costly than paper forms, improve accuracy with data validation and acquisition, are more accessible, enhance the rate and timeliness of responses to questionnaires, and eliminate mailing costs. Students will also distribute PDF business documents, publish them to the web, and tabulate user responses. The software used for this course includes Adobe Acrobat and Microsoft Word.

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 101 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

In this course, students are introduced to the general concepts of chemistry such as the states of matter, classification of compounds, atomic structure, density, types of chemical reactions, gas laws and stoichiometry. Students will explore best practices and use chemical laboratory procedures to perform experiments, collect data and calculate results. Students with no background in high school chemistry or who have not had high school chemistry for 4 or more years may wish to take this class before taking CEM 105 or CEM 111.

CEM 105 Fundamentals of Chemistry**4 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; Academic Math Level 3; high school chemistry taken in the 2 years prior to enrolling in this course or CEM 101, minimum grade "C"**45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours**

In this course, students explore a 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). This course is designed for students with an interest in nursing, other health related areas, and those needing a general science elective.

CEM 111 General Chemistry I**4 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; MTH 169 or higher (excludes MTH 178); high school chemistry (taken within last 5 years) or CEM 101 (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**

In this course, students will learn 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. Students explore 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; Academic Math Level 3; 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. Students will learn the nomenclature of organic compounds, stereochemistry, preparation and reactions of aliphatic and aromatic compounds. In the laboratory, students will practice the preparation and handling of organic compounds, including purifying and characterizing organic compounds.

CEM 222 Organic Chemistry II**4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 3; CEM 211 minimum grade "C"
45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

This course is the second of a two-semester sequence. In this course, students will continue to learn nomenclature, stereochemistry, preparations, and reactions of organic compounds (aromatic compounds, organic oxygen and sulfur compounds, carbonyl compounds, carboxylic acids, amines) and biological compounds. Students will apply this knowledge by developing reaction sequences that can be used to synthesize various organic compounds from given starting materials. In the laboratory, students will learn how to synthesize and isolate organic compounds and then characterize them using spectroscopic methods.

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

In this course, students receive an overview of growth and development of young children from birth through age eight. It includes areas of physical, language and communication, math and science, and social emotional development. Child development theory, theorists and current research on executive function and brain development are also examined.

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**1 credit**

Level I Prerequisites: Academic Reading and Writing Levels of 6; CCP 122, CCP 123, CCP 132 and CCP 133; consent required
15 lecture, 0 lab, 0 clinical, 0 other, 15 total contact hours

In this course, candidates for the Child Development Associate (CDA) national child care certificate are assisted in preparing 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 122 and CCP 123, 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 225 Infant-Toddler: Critical Competencies for Working with Young Children**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**

In this course, students will explore the critical role that the adult-child relationship plays in supporting infant and toddlers' optimal development and learning in three key areas: (1) social-emotional, (2) cognitive, and (3) language and literacy. Students will also gain knowledge and skills that support the unique characteristics of infants and toddlers from dual-/multi-lingual families.

CCP 230 Child Observation and Assessment**3 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; CCP 209 minimum grade "C", may enroll concurrently**45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours**

In this course, students will explore developmentally appropriate observation and assessment techniques for young children and early childhood programs. Students will learn to objectively record observations of young children, complete child assessments and use assessment data to inform instruction. Students will also be exposed to program assessment based on Michigan's Early Childhood Standards of Quality.

CCP 251 Education of the Young Child with Exceptionalities**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 young 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 titled Education of Exceptional Children.

Chinese**CHN****CHN 111 First Year Chinese 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

In this course, students will be introduced to Modern Standard Chinese, also called Mandarin-Putonghua (Common language) and Guoy (National language). The essential knowledge of both Chinese characters as well as grammatical structures will be imparted for the language acquisition of written Chinese. Students will gain listening, speaking, reading and writing skills in standard Chinese, attaining approximately the high novice level on the ACTFL proficiency scale. Students with prior knowledge of Chinese are welcome in this class.

CHN 122 First Year Chinese II**5 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; CHN 111 minimum grade "C" or Students who have taken a Chinese placement exam elsewhere may request an override from the instructor.
75 lecture, 0 lab, 0 clinical, 0 other, 75 total contact hours

This course is a continuation of first year Chinese and focuses on consolidating previously learned language skills, and improving and expanding correct tonal range. Students will focus on understanding the systematic nature of Chinese characters including the order of strokes, the radical and the function of their phonetic and semantic components. The relationship between Chinese language and ways of life, as well as the use of language according to social settings, will be emphasized throughout the semester.

CHN 201 Second Year Chinese**4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; CHN 122 minimum grade "C" or Students who have taken a Chinese placement exam elsewhere may request an override from the instructor.
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This intermediate level Chinese course is a continuation of the introductory course on standard Mandarin Chinese (Putonghua in China, or Guoyu in Taiwan). The goal of the course is to advance the students' communicative competence in all four aspects of language learning: listening, speaking, reading, and writing. Emphasis will be placed on training the students' ability to write in Chinese characters and use tools (e.g. dictionary) to further advance their knowledge and use of the language.

CHN 202 Second Year Chinese II**4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; CHN 201 minimum grade "C" or Students who have taken a Chinese placement exam elsewhere may request an override from the instructor.
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This course is a continuation of second year standard Mandarin Chinese (Putonghua in China, and Guoyu in Taiwan). Students will review and expand the lexicon and grammatical structures learned in the prerequisite courses. Students will learn how to grasp the main ideas of both formal and informal short speeches in academic settings. The goal of the course is to improve students' levels of communicative competence in listening, speaking, reading and writing in modern Chinese, with an emphasis on the traditional, non-simplified, character writing system.

Collision Repair Technician**CRT****CRT 202 Refinish Technician I****4 credits**

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

In this course, students will continue their training in advanced refinishing techniques. Proper spray-gun set-up and operation will be covered. Other course topics such as the use of job specific tooling that aids in the jiggling of small parts, information on the use and application of masking materials, problem-solving and time management skills will be covered. Actual vehicles, used as training aids, will complement information presented on masking for primer, paint and spot repairs. Color theory and how to effectively tint solid and metallic colors to achieve a blendable color match and advanced refinishing techniques will also be discussed. This course contains material previously taught in CRT 200 and CRT 240.

CRT 203 Collision Technician I**4 credits**

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

In this course, students will study advanced repair techniques such as damage analysis, the use of computerized frame equipment, panel sectioning and non-structural collision repair. Lab activities will include the selection of proper tools to repair or replace collision damaged parts on vehicles. Students learn to repair structurally damaged conventional frame and unitized bodies. 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 mechanical component replacement, as related to the collision repair industry, is also presented. This course contains material previously taught in CRT 201 and CRT 241.

CRT 222 Refinish Technician II**4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; CRT 202 minimum grade "B", may enroll concurrently

60 lecture, 45 lab, 0 clinical, 0 other, 105 total contact hours

In this course, students will apply advanced collision refinishing training in "real world" situations. They will perform light to medium level refinishing operations on college-owned vehicles. 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. Also covered are crucial final detail and inspection information that the modern refinish technician must know in order to effectively release a vehicle back to its owner. 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. This course contains material previously taught in CRT 220 and CRT 260.

CRT 223 Collision Technician II**4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; CRT 203 minimum grade "B", may enroll concurrently

60 lecture, 45 lab, 0 clinical, 0 other, 105 total contact hours

In this course, students will be introduced to outer panel replacement including 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. This course contains material previously taught in CRT 221 and CRT 261.

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

In this course, students will prepare and deliver oral presentations on various topics. Topic selection, message development, outline and visual preparation will be covered, as well as how to engage the audience through appropriate delivery skills. Students will also learn essential listening and organizational skills useful in communication and applicable to the real world. This course is intended to help students become better overall communicators.

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 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

In this performance-based course, students are introduced 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, promos, pitches, liners, 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 builds upon previously acquired skills to give students a greater understanding of the radio industry. Advanced work in editing, programming and production will prepare students for the day-to-day workings of a station, along with a greater understanding of ratings, formats and promotions. Students will also host a one-hour radio show on Orchard Radio, enhancing their live production skills. These combined experiences will give students the knowledge necessary to work in a variety of departments within the industry.

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

Students practice effective communication strategies including presentations, discussions and explain as they learn the foundations of family communication. Coursework will focus on practical application of how families work. Students will explore how families identify themselves through the creation of and presentation of personal narrative and 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

Students engage in an active learning approach to apply modern intercultural communication theories and analyze contextualized examples of intercultural communication. In this course, students practice effective communication through small group interactions, presentations and critical listening while gaining cross-cultural competencies for the workplace and personal life.

COM 235 Broadcast Media Arts Portfolio**3 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; COM 155, COM 160, and COM 170 minimum grade "C"**45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours**

In this course, students gain experience in the day-to-day duties of radio production professionals and spend scheduled production time in writing, editing, and announcing. Students will complete an electronic portfolio of their best work as part of an audition package to submit to potential employers and/or internships.

COM 240 Broadcast Media 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 Media Art students will work in conjunction with a local media station to gain hands-on experience within the industry. Students will acquire working knowledge of the day-to-day operations within the station, as well as industry practices. Students will be exposed to and work in many areas within a station such as marketing and promotions, production and programming, and sales and traffic.

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; Academic Math Level 1
Level II Prerequisites: A working knowledge of spreadsheet and word processing software or CIS 100
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students will be introduced to the principles of information systems for business majors. Students receive 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 spreadsheets and word processing software to be successful in the course.

CIS 121 Linux/UNIX I: Fundamentals**4 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
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students are introduced to UNIX and Linux tools. 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, and a basic introduction to Linux. This course is designed to help students prepare for the LPI Linux Essentials Certificate.

CIS 161 Introduction to PowerShell**4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 3
Level II Prerequisites: CNT 211 or CNT 223 or CNT 224
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students are introduced 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 4 credits**Level I Prerequisites:** Academic Reading and Writing Levels of 6**Level II Prerequisites:** CIS 121**60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours**

In this 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 4 credits**Level I Prerequisites:** Academic Reading and Writing Levels of 6**Level II Prerequisites:** CIS 206 minimum grade "C"**60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours**

In this 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 help students prepare for Linux Certification Exams.

CIS 221 Linux/UNIX Programming and Scripting I 4 credits**Level I Prerequisites:** Academic Reading and Writing Levels of 6**Level II Prerequisites:** CIS 121 minimum grade "C"**60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours**

In this course, 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 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 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 Database Principles and Application 3 credits**Level I Prerequisites:** Academic Reading and Writing Levels of 6; CPS 120, CPS 161 or CPS 171, minimum grade "C"**45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours**

In this course, students are introduced to contemporary database theory and practice. Topics covered include terminology, database structures, SQL (structured query language), and NOSQL concepts and application. This course is intended for anyone possessing a basic knowledge of programming who is interested in database theory and practice. The previous titles of this course are Small Systems Database and Relational Database Concepts and Application.

CIS 285 Applied Data Analytics**4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; BMG 265, BMG 275, and CIS 282, minimum grade "C"
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students will be introduced to the fundamental concepts of "Big Data" management and data science analytics, learning to recognize the challenges faced in dealing with massive volumes of available data as well as in proposing scalable solutions for them. This course is highly interactive, using case studies that span multiple vertical industries to process and analyze data related to common business issues.

Computer Networking Technology**CNT****CNT 201 Administering Microsoft Windows Client Operating Systems****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 provided with 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.

CNT 206 Introduction to Networks**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 architecture, structure, functions, components, and models of the Internet and other computer networks. The principles and structure of internet protocol (IP) addressing and the fundamentals of Ethernet concepts, media, and operations are introduced to provide a foundation for the curriculum. By the end of the course, students will be able to build simple local area networks (LANs), perform basic configurations for routers and switches, and implement IP addressing schemes. This course is part of the CISCO networking curriculum at WCC and helps students prepare for a portion of the CISCO Certified Network Associate (CCNA) certification examination.

CNT 211 Installation, Storage, and Compute - Windows Server 2016**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 part of a series of courses that provides the skills and knowledge necessary to work in a Windows Server 2016 environment and lays a foundation for the first Windows Server 2016 MCSA certification. Topics include the installation options for Server 2016 including graphical, server core, Nano server, and server containers. Also, methods of handling installations, including imaging and various image deployment options are covered. Storage features such as RAID, storage spaces, iSCSI, and fail-over clustering are implemented with both physical and virtual disks. Server maintenance including backups, WSUS, VM migration and replicas, network load balancing and permissions are incorporated. The title of this course was previously Installing and Configuring Windows Server 2012.

CNT 216 Switching, Routing and Wireless Essentials**4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 2; CNT 206 minimum grade "C-" may enroll concurrently
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

The second course in the CISCO Certified Network Associate (CCNA) curriculum focuses on switching technologies and router operations that support small-to-medium business networks and includes wireless local area networks (WLANs) and security concepts. Students learn key switching and routing concepts. They can perform basic network configuration and troubleshooting, identify and mitigate local area network (LAN) security threats, and configure and secure a basic WLAN. This course is part of the CISCO networking curriculum at WCC and helps students prepare for a portion of the CCNA certification examination. The title of this course was previously Routing and Switching Essentials.

CNT 223 Networking with Windows Server 2016**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 part of a series of courses that provide skills and knowledge necessary to work in a Windows Server 2016 environment and lays a foundation for the second Windows Server 2016 MCSA certification. Topics include networking basics such as IPv4 and IPv6 addressing, inter-LAN communication between windows servers and clients, DHCP and DNS server installations and configuration, remote access services including routing, dial-up, VPNs, direct access, radius server, NIC teaming, network address translation, remote desktop gateway, distributed file system, branch caching, and IPAM. The title of this course was previously Administering Windows Server 2012.

CNT 224 Identity with Windows Server 2016**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 part of a series of courses that provide the skills and knowledge necessary to manage and maintain the core infrastructure required for a Windows Server 2016 environment, and lays a foundation in the preparation for the Windows Server 2016 MCSA certification. Topics include all aspects of active directory and includes initial A.D. and DNS installations, as well as creating and managing users, groups, and computers. Group policies are emphasized which include security policies, auditing, inheritance, software installations, folder redirection, logon scripts, and printer installations. Also covered are dynamic access control, trusts, sites, certificate server, and delegation. The title of this course was previously Configuring Advanced Windows Server 2012 Services.

CNT 226 Enterprise Networking, Security, and Automation (ENSA)**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

The third course in the CCNAv7 curriculum describes the architectures and considerations related to designing, securing, operating, and troubleshooting enterprise networks. This course covers wide area network (WAN) technologies and quality of service (QoS) mechanisms used for secure remote access. Enterprise Networking, Security, and Automation (ENSA) also introduces software-defined networking, virtualization, and automation concepts that support the digitalization of networks. Students gain skills to configure and troubleshoot enterprise networks, and learn to identify and protect against cybersecurity threats. They are introduced to network management tools and learn key concepts of software-defined networking, including controller-based architectures and how application programming interfaces (APIs) enable network automation. The title of this course was previously Scaling Networks.

CNT 236 Connecting Networks**4 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; CNT 226 minimum grade "C-", may enroll concurrently
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students discuss the WAN technologies and network services required by converged applications in a complex network. The course enables students to understand the selection criteria of network devices and WAN technologies to meet network requirements. Students will learn to configure various WAN protocols, such as HDLC, Point-to-Point Protocol, PPOE, and GRE tunnels. This course is part of the CISCO networking curriculum at WCC and helps students prepare for a portion of the CISCO Certified Network Associate (CCNA) certification examination. This course was previously CNT 245. The title of this course was previously Internetworking IV-WANs.

CNT 290 Network Forensics**4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; CSS 210 or CNT 216, minimum grade "C"
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students will be introduced to various tools and concepts associated with network forensics, including protocol and services monitoring, event detection and analysis. Network topologies include enterprise, LAN, WAN and wireless configurations. Hands-on configuration, monitoring and troubleshooting of various network services and after-event analysis of network intrusions is performed.

Computer Science**CPS****CPS 120 Introduction to Computer 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 are introduced to computer science. Students learn to write, enter, compile and execute simple computer programs. 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.

CPS 141 Introduction to Programming Using Python**4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 3
Level II Prerequisites: Basic skills using computers including, but not limited to, using a web browser; creating, saving, and finding files on a computer.
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students are introduced to programming using Python. Topics include applications in informatics, accessing data on the Internet and human-computer interactions.

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

In this course, students are introduced 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 objects and classes, constructors, inheritance, and polymorphism. Abstract classes and interfaces are minimally covered. CPS 261 will cover these topics in depth. Prior programming experience is recommended. Students who have no programming experience should consider taking CPS 120.

CPS 171 Introduction to Programming with C++**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

In this course, students are introduced to programming using the C++ language. 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.

CPS 251 Android Programming Using Java**4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; CPS 161, minimum grade "A-" or CPS 261, minimum grade "B-"
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students create programs written in Java to run on an Android smart phone or tablet. Students taking this class should have a very good knowledge of Java. Topics include Graphical User Interfaces, data storage, audio, databases, GPS and Google Maps.

CPS 261 Advanced Java Concepts**4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; CPS 161 minimum grade "B-"
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

In this course, students will continue the study of C++ by learning 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.

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

In this course, students continue the C++ sequence and study 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 "B-"**60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours**

In this course, students will learn about Java Servlets, Java Server Pages (JSP), JSTL, Expression Language, Tag Libraries 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 292 C# for Programmers**4 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; Academic Math Level 4; CPS 161 or CPS 171, minimum grade "B-"**60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours**

In this course, students will learn more advanced skills in C#. Class projects will include many advanced features of Microsoft Visual Studio. 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, and using object-oriented techniques such as encapsulation, inheritance, interfaces, delegates, and polymorphism. Students with equivalent programming experience may contact the instructor for permission to waive the prerequisites. The title of this course was previously Intermediate and Advanced C# .Net.

CPS 298 Professional Team Programming**4 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; CPS 251, CPS 256, CPS 261 or CPS 278, minimum grade "B-"**60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours**

The goal of this course is to simulate industrial experience of working in teams. Students will work in teams using version control software (GIT, GitHub) to manage their projects. The course explores the advantages and disadvantages of leading programming approaches like Agile Programming, Waterfall approach, Top down programming and Paired developers. Students will learn and apply built-in testing tools and other industry practices.

Computer Systems Security**CSS****CSS 200 Introduction to Network Security - Security+****4 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; Academic Math Level 1**Level II Prerequisites:** CIS 121 minimum grade "C"**60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours**

In this course, students learn the fundamentals of network security. Topics to be covered include understanding security measures and threats, techniques and tools for testing and securing systems, legal and ethical issues, basic intrusion detection and incident response methods. Many of the topics required for the CompTIA Security+ certification will be covered. This course helps students prepare for the CompTIA Security+ Certification. The student is expected to have a basic knowledge of Linux, Windows, working at the command line of any operating system and networking.

CSS 201 Introduction to Cryptography**3 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; Academic Math Level 3 or MTH 160; CSS 200 and CIS 161, minimum grade "C"; CSS 200 may enroll concurrently**45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours**

In this course, students are introduced to the terminology, concepts, and application of cryptography in digital communications. Topics such as algorithms, encryption protocols, message integrity and authentication using hash functions will be discussed.

CSS 205 Essentials of Network Penetration Testing**4 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; Academic Math Level 1; CSS 200 minimum grade "C", may enroll concurrently**60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours**

In this course, students are introduced to the techniques of network penetration testing using open source tools. Through various hands-on 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. Students are expected to have knowledge of Linux, Windows, working at the command line of any Operating System and networking.

CSS 210 Network Perimeter Protection - CCNA Security**4 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; Academic Math Level 1**Level II Prerequisites:** CNT 206 and CNT 216, minimum grade "C"**60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours**

In this course, students learn how to implement security solutions that reduce the vulnerability of computer networks. Topics include principles of network security, packet filtering with ACLs, network, configuring and deploying multiple firewall topologies using Cisco devices, implementing virtual private networks (VPNs) and user authentication. This course uses the Cisco Networking Academy curriculum to help students prepare for the CCNA Security certification examination. The titles of this course were previously Computer Security IV and Basic Network Perimeter Protection.

CSS 225 Cybersecurity Operations - CCNA Cyber Ops**4 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; Academic Math Level 1; CSS 200 minimum grade "C"**60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours**

In this course, students are introduced to Cybersecurity Operations. Students will develop the knowledge and skills needed to work as a Security Analyst with a Security Operations Center team. Security skills needed for monitoring, detecting, investigating, analyzing and responding to security events, thus protecting systems and organizations from cybersecurity risks, threats and vulnerabilities will be discussed. This course helps prepare students to take the Cisco Certified Network Associate (CCNA) exam.

CSS 285 Essentials of Automotive Penetration Testing**4 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; ASV 131 and CST 185, minimum grade "C"**60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours**

In this course, students will gain an understanding of the automotive cybersecurity threat-landscape. Automotive attack surfaces will be highlighted, with a focus on attack techniques to provide insight into creating secure automotive systems. Students will complete hands-on exercises including reverse engineering in a lab environment. Emphasis will be placed on offensive methodologies with a follow-up on defensive strategies.

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 the command line, utilizing the MS-DOS operating system as the instructional tool. Relevant commands used regularly by network administrators are emphasized. Activities include learning command syntax, parameters, redirection, error messages and file/directory structures. Networking activities include mapping drives, capturing printers, network backups, preparation of removable boot devices, batch file creation and an intro Powershell Scripting. 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**Level II Prerequisites:** 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 185 Local and Mobile Networking Essentials**4 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6**Level II Prerequisites:** Basic computer skills with the Windows Operating System would be extremely helpful or completion of CIS 100.**60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours**

Students learn basic networking concepts including building networks, connecting to a network and connecting networks. Included are peer-to-peer, client/server relationships, network topologies, media, architectures, the OSI model, Ethernet and TCP/IP protocols, IPv4/IPv6 and MAC addressing, routers/routing, network printing, NAT, VPN's, wireless, serial communication, Bluetooth, NFC, and DSRC. The course also provides a strong foundation in preparation for the CompTIA Network+ Exam. This course was previously CST 225.

CST 270 Computer Forensics I**4 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; CST 160 minimum grade "C+"**60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours**

In this course, students will cover the identification, handling, recovery, analysis and reporting of data on digital storage devices. Students will be introduced to the type and location of data of evidentiary value, from identification of binary structure to directory location. Topics include analysis of volume and file system, evidence data including, recovery of password protected and deleted data, Internet artifacts, thumb files, shadow files, and basic registry analysis. Hands-on exercises guide discussions and reinforce the subject matter. Two primary forensic tools are introduced and utilized in this course: Forensic Tool Kit Suite (FTK) Imager, and FTK. Other tools include freeware programs that are widely used for forensic purposes. Legal considerations of this profession are also covered.

CST 275 Computer Forensics II**4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; CST 270 minimum grade "C+" and CNT 201 minimum grade "C"
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students learn new skills to apply to real and lab-produced hypothetical cases. Hands-on exercises guide discussions and reinforce the subject matter. Students will learn advanced techniques used to obtain and analyze digital information for use as evidence in civil or criminal cases. Topics may include analysis of volume and file system or of specific evidence data including registry and Internet artifacts, deleted data, thumb files, shadow files and reparse points. Students will enhance their understanding of the Forensics Tool Kit Suite. This course helps prepare students to sit for the AccessData ACE certification test. This course contains material previously taught in CSS 275. The title of this course was previously Data Recovery and Forensics.

Construction Management**CMG****CMG 110 OSHA 10 Hour for the Construction Trades****.5 credit**

Level I Prerequisites: Academic Reading Level 3; Academic Writing Level 3
7.5 lecture, 4.5 lab, 0 clinical, 0 other, 12 total contact hours

Students will be trained on the requirements established by the federal Occupational Safety and Health Administration for the OSHA 10-hour Safety Certification.

CMG 125 Introduction to Engineering Design Technology**4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 3
45 lecture, 30 lab, 0 clinical, 0 other, 75 total contact hours

In this course, students are introduced to various production and engineering drawings as well as modeling used in advanced technology fields such as automotive, manufacturing, prototyping and construction technology. Students will identify plan symbols and graphics and be introduced to several methods used in automated design software.

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 Level 5; Academic Writing Level 3; Academic Math Level 1; 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.

CON 105 Construction Framing II**3 credits**

Level I Prerequisites: Academic Reading Level of 5; Academic Writing Level of 3; Academic Math Level 1; 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.

CON 108 Introduction to Construction Technology**2 credits**

Level I Prerequisites: Academic Reading Level 5; Academic Writing Level 3; Academic Math Level 1
15 lecture, 30 lab, 0 clinical, 0 other, 45 total contact hours

This is an introductory course for students with 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 an override into the next course in sequence.

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 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 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.

Correctional Science**COR****COR 101 Local Corrections Officer Academy****10 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; consent required
150 lecture, 0 lab, 0 clinical, 10 other, 160 total contact hours

This is a 160-hour Local Corrections Office Academy, approved by the Michigan Sheriff's Coordinating and Training Council (MSCTC) and designed for correctional personnel supervising inmates in Michigan county jails. It is open to all in-service Corrections Officers as well as all pre-service personnel looking for a career as a professional corrections officer in Michigan. For information about the pre-service training please see the MSCTC website at <http://misctc.org/index.html>.

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 history, function and 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

In this course, students will study the role of the individual officer and the department in achieving and maintaining public support. Topics include customs, culture, and skills needed to foster relationships with all populations of the community. Students will be introduced to 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. The student will be exposed to ethical issues that a practitioner in law enforcement, the courts or corrections may encounter in their careers. Students will learn the information and skills necessary to address these issues.

CJT 130 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. This course was previously BOS 211.

CJT 144 Parole, Probation, and Community Corrections**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 will be introduced to the topics of parole, probation, and community corrections. The course will examine the theories, concepts, procedures, and management of offenders assigned to those forms of corrections. Responsibilities and duties of each type of parole and probation agent are discussed. This course contains material previously taught in CJT 225.

CJT 156 Everyday Law**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 will be introduced to our legislative process and the United States legal system, as well as the institutions responsible for carrying out the law. In addition, students will be exposed to the various fields of law which may affect their daily lives, such as tort law, civil rights law, contract law, criminal law, family law and landlord-tenant law. This course contains material previously taught in CJT 154 and CJT 155 Everyday Law I and II.

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

In this course, students will study international terrorism and domestic terrorism, with a focus on how the federal and state governments respond to and investigate terrorism. Students will explore the roots of terrorism, types, causes, strategies, targets and weapons. 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 199 On the Job Training**3 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; CJT 100 minimum grade "C"; consent required
15 lecture, 0 lab, 0 clinical, 100 other, 115 total contact hours

In this course, students are given supervised positions as observers/interns with various criminal justice agencies. Students are required to maintain a log of activities and submit a report at the end of the semester. Some agency assignments may require additional coursework for eligibility. All activities are monitored by an instructor, and regular meetings with the instructor are required. Instructor consent is required to register for this course.

CJT 208 Criminal Evidence and Procedure**3 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6
Level II Prerequisites: CJT 160 minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students examine the criminal justice judicial process, including the roles of defense attorneys, prosecutors and judges. Emphasis is placed on 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 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 229A Law Enforcement Training Part I**12 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; minimum 45 credits with 2.0 GPA and pass MCOLES tests; consent required
330 lecture, 333 lab, 0 clinical, 0 other, 663 total contact hours

This is part of an approved Police Academy course for the State of Michigan. Students are introduced to the skills and abilities required to become a law enforcement officer. 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. Students must complete both CJT 229A and CJT 229B to be eligible to sit for the MCOLES exam. This course contains material previously taught in CJT 221A.

CJT 229B Law Enforcement Training Part II**7 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; minimum 45 credits with 2.0 GPA, pass MCOLES tests and CJT 229A; consent required
110 lecture, 110 lab, 0 clinical, 0 other, 220 total contact hours

This is the conclusion of an approved Police Academy course for the State of Michigan. Students develop the skills and abilities required to become a law enforcement officer. 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. Students must complete both CJT 229A and CJT 229B to be eligible to sit for the MCOLES exam. This course contains material previously taught in CJT 221B.

Culinary Arts**CUL****CUL 104 Baking Science****2 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; Academic Math Level 2 or MTH 067 or higher, may enroll concurrently in MTH
15 lecture, 30 lab, 0 clinical, 0 other, 45 total contact hours

In this entry-level course, students are introduced to the basics of baking science. Students observe and perform experiments in the demo lab to determine how key ingredients react in the baking process. Upon completion of this course, students will have the basic knowledge of ingredient functions needed for further instruction in culinary, baking and pastry lab courses.

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

In this course, students learn the importance of sanitation to the hospitality worker: layman's bacteriology, communicable diseases, food poisoning, pest control, cleaning, sanitizing, and personal hygiene. Students must pass the ServSafe Manager Food Handler National Exam in order to earn a grade of "C" or higher in this course.

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 Culinary Principles**3 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; Academic Math Level 2 or concurrent enrollment in MTH 067 or higher; CUL 110 minimum grade "C", may enroll concurrently
30 lecture, 60 lab, 0 clinical, 0 other, 90 total contact hours

In this course, students are introduced to basic professional kitchen concepts, culinary terminology, fundamental techniques, and methods involved in the food service industry. Topics such as basic vegetable and meat fabrication, product identification, culinary history, and science and theory of the cookery process will be explored. Students will develop time management, organizational, and problem-solving skills related to professional kitchen standards. The title of this course was previously Fundamental Culinary Principles.

CUL 118 Culinary Nutrition**3 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; Academic Math Level 2 or concurrent enrollment in MTH 067 or higher
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students are introduced to the basic principles of nutrition and health, and their relationship to foodservice. Students study nutrients including functions, digestion, absorption, food sources, and metabolism. Menu development focuses on the use of nutritious foods following current USDA guidelines. Health, disease, food trends, and sustainable food systems are discussed in relationship to a healthy lifestyle. The title of this course was previously Principles of Nutrition.

CUL 120 Classical Kitchen**3 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; CUL 110 and CUL 116, minimum grade "C"; CUL 110 may enroll concurrently**15 lecture, 90 lab, 0 clinical, 0 other, 105 total contact hours**

In this course, students will further explore culinary skills and techniques classically used in professional kitchens. Students will develop an understanding of traditional flavor profiles, ingredients, methods of cookery and plate presentation through exploration of classical cuisine. Students will also execute the planning, preparation, and timing of quality multi-course meals gaining the experience of a restaurant kitchen. The title of this course was previously Classical Kitchen Operations.

CUL 121 Modern Kitchen**3 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; CUL 110 and CUL 116, minimum grade "C"; CUL 110 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 contemporary techniques involved in the production of various food and menu items. Emphasis will be placed on continued student development in the cookery process, introduction to a la minute style kitchen operations, and teamwork concepts. To gain practical experience, students will rotate through stations and be involved in all aspects of commercial kitchen operations. The title of this course was previously Modern Kitchen Operations.

CUL 132 Cakes and Wedding Cake Design**2 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; 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. The title of this course was previously Basic Cake and Wedding Cake Design.

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 141 Principles of Cost Control**3 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; Academic Math Level 2 or concurrent enrollment in MTH 067 or higher**45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours**

In this course, students are introduced to cost control in the culinary industry. They will learn to distinguish between types of costs and recognize the relationship between cost, volume and profit. By using forecasting and cost control exercises, students will analyze the costs related to food, beverage, labor and supplies and apply those to the creation of a menu and the associated price structure. In addition, students will discuss purchasing, receiving, storage and inventory. Students will be given the opportunity to earn nationally recognized certification. This course contains material previously taught in CUL 224.

CUL 145 Dining Room Service**3 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; Academic Math Level 2 or concurrent enrollment in MTH 067 or higher; CUL 110 minimum grade "C", may enroll concurrently**30 lecture, 45 lab, 0 clinical, 0 other, 75 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 environment provides students with real world, hands-on experience in a learning setting. This unique restaurant allows students to practice customer relations and management techniques. Students will be given the opportunity to earn nationally recognized certification for professional portfolio development. The title of this course was previously Introduction to Dining Room Protocol.

CUL 150 Management and Supervision**3 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; Academic Math Level 2 or concurrent enrollment in MTH 067 or higher**45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours**

In this course, students will 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 and Supervision.

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 201 Chocolate Confections**3 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; CUL 104 and CUL 110, minimum grade "C"**15 lecture, 60 lab, 0 clinical, 0 other, 75 total contact hours**

In this course, students will learn how to use chocolate to create candies, fillings and decorations. Focusing on chocolate confection technology from "bean-to-bar", students will explore ingredient functions, tempering, and the production of chocolate confections in an artisan setting.

CUL 205 Sugar and Chocolate Showpieces**3 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; CUL 104 and CUL 110, 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 chocolate and sugar showpieces. Emphasis is placed on chocolate tempering, chocolate, sugar and pastillage display pieces. Many of the techniques learned in this course can be used in pastry competitions. The title of this course was previously Pastry Arts and Design.

CUL 206 Plated Desserts**3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; CUL 104 and CUL 110, minimum grade "C"
15 lecture, 60 lab, 0 clinical, 0 other, 75 total contact hours

In this course, students are introduced to the art of plating desserts. The student will gain an overall appreciation and understanding of dessert plating techniques used to create high quality, visually attractive desserts for restaurants, country clubs and conference centers.

CUL 208 Menu Planning**3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; CUL 104 and CUL 116, minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students will learn the importance of a carefully planned menu in various food operations. A menu is the controlling factor in both commercial and non-commercial operations. Using a menu as a management tool in every area of operation--from identifying the market, planning the facility, purchasing food items, promoting items to customers, and providing excellent service--can help ensure the success of the business. Students will plan, analyze, design and write a variety of menus.

CUL 210 Garde Manger**3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; 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 Advanced Kitchen Operations: Garde Manger.

CUL 211 Artisan Breads**4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; CUL 104, 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. The title of this course was previously Advanced Bread Production.

CUL 215 Cake Decorating Techniques**2 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; CUL 104 and CUL 110, minimum grade "C"
15 lecture, 45 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students 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. The title of the course was previously Advanced Cake Decorating.

CUL 221 Culinary Purchasing**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 purchasing functions such as the competitive bidding process and revenue generation. Students will discuss ethical considerations, specifications for food equipment purchase, proper receipt and storage methods, inventory controls and security measures. Students will be given the opportunity to earn a nationally recognized certification to use in a professional portfolio.

CUL 230 American Regional and Global Cuisines**3 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; CUL 118, CUL 120, CUL 121, CUL 141, CUL 150, minimum grade "C" in all CUL; may enroll concurrently in CUL 141 and CUL 150
15 lecture, 90 lab, 0 clinical, 0 other, 105 total contact hours

In this course, students will focus on the advanced application of culinary technique, quality food production, and current trends of presentation. They will explore regional American and global flavor profiles relating to indigenous ingredients. Implementation of professional kitchen management, teamwork, and organizational skills will be emphasized from menu development to execution as part of the capstone experience for students completing the culinary arts program. The title of this course was previously Advanced Kitchen Operations: American Regional.

CUL 232 Hot and Cold Food Competitions**2 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; CUL 110, CUL 120 and CUL 121, minimum grade "C"
0 lecture, 60 lab, 0 clinical, 0 other, 60 total contact hours

This course is a culminating experience 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.

CUL 233 Ice Carving**2 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; CUL 116 minimum grade "C"
0 lecture, 60 lab, 0 clinical, 0 other, 60 total contact hours

In this course students are introduced to the tools, techniques and art of ice carving. Students will develop the skills necessary to design, plan and carve sculptures. Students will have the opportunity to turn blocks of ice into sculptures.

CUL 234 Vegetarian and Vegan Cuisine**2 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; CUL 120 minimum grade "C"
0 lecture, 60 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students will explore healthy cooking techniques re-interpreting the center of the plate focus to meet the growing demands of health-conscious diners of today. Emphasis on the application of nutrition principles for various diets and food trends are discussed and prepared. Topics including ingredient substitutions, ingredient alternatives, and inspiration of vegetarian friendly international cuisines will provide awareness to the approach of healthy cuisine.

CUL 245 Beverage Management**2 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; CUL 110 and CUL 145, minimum grade "C"
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

This course is designed to introduce students to beverage identification, production, and service strategies for effective management and operational controls. Emphasis will be placed on familiarizing students with the wine and food affinity, alcoholic and non-alcoholic beverages and responsible alcohol service to the dining public. ServSafe Alcohol certification exam is administered in this course. This course contains material previously taught in CUL 250.

CUL 251 Wines of the World**2 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; CUL 145 and CUL 245, minimum grade "C"; may enroll concurrently in CUL 245
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

In this course, students will be exposed to various wines and categories from Old world to New world originations and styles. The history of wine, bottle service protocol, wine classification, fermentation process, varietals and blends, and the sensory process of wine appreciation are explored in this course. An important element of this course is the responsible tastings of the actual product. Students must be 18 years or older and ServSafe alcohol certified to be enrolled.

Custom Cars & Concepts**CCC****CCC 210 Custom Auto Body Technician I****4 credits**

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

In this course, students who are interested in specialty car markets will build on experiences in prerequisite courses to evaluate their skills, while learning the techniques and applications of the design and building of custom cars. Students will learn to install and modify many aftermarket products such as hinge kits, remote door openers, custom enclosures, interior modifications and the process used to achieve show car quality sheet metal fit and finish. Teamwork, establishing project guidelines, time management, developing problem-solving skills, goal setting and the achievement of these goals will be emphasized. This course contains material previously taught in CCC 200 and CCC 240.

CCC 215 Custom Fabrication and Chassis Design I**4 credits**

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

In this course, students will be introduced to metal fabrication, chassis design and assembly of custom vehicles. Students build their skills using tools such as the iron worker, hand brake and foot or Beverly sheer. Topics such as choosing wheel/tire offset combinations and suspension modifications are covered. Class projects will be based on the design and fabrication of "one-of-a-kind" parts used on a custom vehicle. Working in a team environment, students will develop problem-solving skills and time management skills. Past project vehicles have gained national recognition and awards. This course contains material previously taught in CCC 201 and CCC 221.

CCC 250 Custom Auto Body Technician II**4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; CCC 210 minimum grade "B", may enroll concurrently
60 lecture, 45 lab, 0 clinical, 0 other, 105 total contact hours

In this course, emphasis will be placed on the application of a show quality paint job. Topics include the removal of factory body imperfections. Students will perform 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. This course contains material previously taught in CCC 220 and CCC 260.

CCC 255 Custom Fabrication and Chassis Design II**4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; CCC 215 minimum grade "B", may enroll concurrently
60 lecture, 45 lab, 0 clinical, 0 other, 105 total contact hours

In this course, students 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. This course contains material previously taught in CCC 221 and CCC 241.

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

In this course, students are introduced to basic rhythmic structures, tap dance exercises and dance steps. Students learn the basic vocabulary of tap such as the names of steps and titles of meters. Students will have 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
0 lecture, 0 lab, 0 clinical, 30 other, 30 total contact hours

In this course, students are introduced to more complex rhythmic structures, tap dance exercises and dance steps. Students increase their basic vocabulary of tap with names of advanced steps. Students will have the opportunity to perform a tap dance piece in an end-of-term recital. This course may be completed for credit up to a maximum of two times.

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 111 Hip Hop Dance**1 credit****Level I Prerequisites:** No Basic Skills
0 lecture, 0 lab, 0 clinical, 30 other, 30 total contact hours

In this course, students are introduced to Hip Hop dance exercises and steps. This course includes the opportunity to perform a Hip Hop dance piece in an end-of-term recital.

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

In this course, students are introduced to and apply complex Hip Hop dance exercises and steps. Students will perform an advanced Hip Hop dance piece in an end-of-semester performance.

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 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

In this course, students address types of diseases and their transmission, the application of OSHA and CDC guidelines to dentistry, and 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

In this course, students cover the formation and eruption of the teeth and craniofacial growth and development. Topics such as cell, tissue and organ development and systems of the body will be examined. Types and uses of local and general anesthesia and medical emergency and appropriate response will be discussed.

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. Students cover 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

In this course, students are introduced to concepts of radiography as they are applied to dentistry. Principles of radiation physics, health and safety factors, and quality control measures are examined. Students then use this knowledge to expose radiographic images in which they must then evaluate to determine if the image is diagnostically acceptable. 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. Students will receive an overview of the history of dentistry, professional organizations, ethics, and the role of the dental health team. Students are introduced to the dental 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; DEN 102 minimum grade "C", may enroll concurrently**30 lecture, 45 lab, 0 clinical, 0 other, 75 total contact hours**

In this course the dental assisting students will be introduced to various materials used in dentistry. The student will learn the purpose, use and properties of these dental materials. The manipulation, practical application and adherence to OSHA regulations and CDC guidelines will be emphasized.

DEN 118 Preventive Dentistry**2 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; Admission to Dental Assisting program; DEN 102, DEN 106 and DEN 107, minimum grade "C"**30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours**

In this course, dental assisting students receive a foundation in preventive dentistry. Methods to ensure the dental health of patients are addressed, including instruction in oral hygiene and proper nutrition. Etiology, prevention and control of dental caries and periodontal disease are emphasized.

DEN 120 Patient Records**1 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; DEN 102, DEN 107 and DEN 110, minimum grade "C"**15 lecture, 15 lab, 0 clinical, 0 other, 30 total contact hours**

In this course, students gain an understanding of how diagnostic data is obtained and recorded for patient assessment. Students will practice common charting techniques and records management. The title of this course was previously Oral Diagnosis.

DEN 128 Dental Radiography Practice**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. Infection prevention methods and maintaining patient and quality assurance records are emphasized. Students gain experience with manikins in the laboratory, and apply these skills to patients in a clinical setting. The content of this course, when combined with DEN 108, meets the Administrative Rules of the Michigan Board of Dentistry educational requirements. The title of this course was previously Dental Radiography Practicum.

DEN 129 Patient Assessment**2 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; DEN 106 and DEN 107, minimum grade "C"**Corequisites:** DEN 120**30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours**

In this course, students gain experience in critical evaluation of a patient's health status in order to modify normal dental routines and apply the essential skills needed to assist in common dental/medical emergencies. The students will study diseases of teeth and supporting structures, oral pathology and systemic diseases and their relationship to oral health. Various drugs and their effect on medical/dental care also are studied. The title of this course was previously Oral Pathology and Dental Therapeutics.

DEN 130 Clinical Practice**2 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; DEN 108, DEN 110 and DEN 120, minimum grade "C" in all DEN courses; DEN 120 may enroll concurrently**Level II Prerequisites:** DEN 112 minimum grade "C"; current CPR card**0 lecture, 0 lab, 120 clinical, 0 other, 120 total contact hours**

In this course, Pathway I students are provided with clinical application of previous dental assisting 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**

In this course, students are introduced to the role of the dental assistant in dental specialties. The latest concepts in dental specialties are presented by dental specialists. Students will develop an understanding of equipment and instruments that are associated with procedures performed in various dental specialties.

DEN 202 Advanced Clinical Practice**2 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; DEN 130 minimum grade "C"**Level II Prerequisites:** Current CPR card**0 lecture, 0 lab, 200 clinical, 4 other, 204 total contact hours**

This course builds on the student's clinical experience in DEN 130. The student develops advanced clinical skills in a variety of dental settings. Students must complete rotations at different clinical sites and provide evidence of such. Students will complete journals, case studies, a clinical portfolio and participate in seminars relating to their clinical experiences.

DEN 202A Advanced Clinical Practice I**1 credit****Level I Prerequisites:** Academic Reading and Writing Levels of 6; DEN 130 minimum grade "C"**Level II Prerequisites:** Current CPR card**0 lecture, 0 lab, 100 clinical, 4 other, 104 total contact hours**

This course builds on the student's clinical experience in DEN 130. The student develops advanced clinical skills in a variety of dental settings. Students must complete rotations at different clinical sites and provide evidence of such. Students will complete journals, case studies, a clinical portfolio and participate in seminars relating to their clinical experiences. Students must earn credit in both 202A and 202B to advance to the next level.

DEN 202B Advanced Clinical Practice II**1 credit****Level I Prerequisites:** Academic Reading and Writing Levels of 6; DEN 130 minimum grade "C"**Level II Prerequisites:** Current CPR card**0 lecture, 0 lab, 100 clinical, 0 other, 100 total contact hours**

This course builds on the student's clinical experience in DEN 130. The student develops advanced clinical skills in a variety of dental settings. Students must complete rotations at different clinical sites and provide evidence of such. Students will complete journals, case studies, a clinical portfolio and participate in seminars relating to their clinical experiences. Students must earn credit in both 202A and 202B to advance to the next level.

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 Assisting 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 (RDA) are outlined in the Administrative Rules of the Michigan Board of Dentistry.

DEN 204A Advanced Functions Lecture**1 credit****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 Assisting program**15 lecture, 0 lab, 0 clinical, 0 other, 15 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 (RDA) are outlined in the Administrative Rules of the Michigan Board of Dentistry.

DEN 204B Advanced Functions Lab/Clinical**3 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 Assisting program**Level II Prerequisites:** current CPR card**0 lecture, 105 lab, 15 clinical, 0 other, 120 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 (RDA) 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, 30 lab, 15 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 and the Administrative Rules of the Board of Dentistry Rule R 338.11404a - R 338.11405c.

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**

In this course, students are introduced to the business practices needed to be an effective team member in a dental office. Students will explore practices such as payroll, accounts receivable and payable as well as appointment scheduling. Students will focus on formatting and preparing written communications. Throughout this course, accuracy and attention to detail will be emphasized. Students will prepare to seek employment as entry-level dental assistants through writing resumes and letters of application and preparing for interviews.

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, 15 lab, 360 clinical, 0 other, 405 total contact hours

In this course, the student will reflect/demonstrate the clinical, laboratory and radiographic skills necessary to be a professional dental assistant and an integral member of the dental health team. 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 portions of the Dental Assistant National Board (DANB) Certified Dental Assistant (CDA) Examination. Students will review current office policies/procedures and make suggestions based on best practices.

Drama**DRA****DRA 152 Acting 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 develop acting skills and techniques through improvisation, theatre games and the presentation of theatrical scenes from contemporary literature. Students practice voice projection, staging and character development as well as creative, comic and emotional expression. These skills apply to stage and film acting, and will appeal to anyone interested in developing acting, dramatic staging, creative expression, presentation and communication skills. All skill levels are welcome.

DRA 180 Theatre Appreciation: The World of Theatre**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 foster an appreciation of theatre as a collective performing art. Through experiencing theatre productions, studying scripts and engaging in reflective discussion, students will explore a diversity of historical and cultural contexts of theatre. In addition, students will analyze major dramatic aspects of theatre, including plot, characterization, setting and production concept to understand and critique theatrical production and dramatic literature. The title of this course was previously Theatre Appreciation.

DRA 204 Improvisational Acting**3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; DRA 152 minimum grade "C", may enroll concurrently
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this interactive acting course, students will be introduced to 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. These skills apply to stage and film acting. Students will practice developing improvisational sketches and prepare to perform before an audience. The title of this course was previously Improvisational Acting for the Theatre.

DRA 208 Acting II**3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; DRA 152 minimum grade "C", may enroll concurrently
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 intermediate 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 skills apply to stage and film acting, and will appeal to anyone interested in developing acting, dramatic staging, presentation and/or communication skills. The title of this course was previously Acting for Theatre II.

DRA 211 Improvisational Acting II**3 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; DRA 204 minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this interactive acting course, students will practice more complex skills related to the art of performing without a script. Various forms of advanced improvisational exercises and traditional acting games will focus on spontaneity, listening and responding, accepting the reality of the scene as well as verbal and non-verbal expression. These more complex improvisational skills apply to stage and film acting.

DRA 240 Acting III**3 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; DRA 208 minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This is a performance-oriented course with an emphasis on ensemble acting skills and techniques. These skills apply to stage and film acting. There is an emphasis on more advanced voice projection, staging, physicality, character development and emotional expression. This course will focus on advanced ensemble projects involving script adaptation, script interpretation and group performance skills necessary for performing in an ensemble theatre setting that may include performances for the community or campus. The lessons, focusing on dramaturgic and acting skills, vary depending on the literature selections, which change each semester.

DRA 260 Acting IV**3 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; DRA 240 minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this advanced performance-oriented course, students apply their knowledge of ensemble acting skills and techniques using more advanced voice projection, staging, physicality, character development and emotional expression in performance projects. Students will demonstrate their skills at script adaptation, script interpretation and group performance necessary in an ensemble theatre setting. The lessons, focusing on dramaturgic and acting skills, vary depending on the literature selections, which change each 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. In this course, students will be introduced to scarcity and rational choice, markets, supply and demand, the business firm costs, and competition. Macroeconomic topics include gross domestic product (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 or MTH 160, 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. In this course, students explore the concepts of scarcity and opportunity cost along with supply and demand. The course 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.

ECO 222 Principles of Economics II**3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 3; ECO 211 minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

This is the second half of the principles of economics sequence. Students will explore elasticity, efficiency and market failure. The course emphasizes understanding production costs and the effects of market structure on economic behavior and performance.

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 Apprenticeship**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 106 Renewable Energy Technology****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 receive a comprehensive introduction to the principles and practical applications of solar, wind, micro-hydro and other 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 complete a written 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
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:** Academic Math Level 3 or higher; 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 the theory and application of AC and DC electrical machines and their controls. Topics include DC generators, DC motors and controls, three-phase power, three-phase transformers, alternators, three-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**60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours**

In this course, students learn the use of the NEC as a tool to plan the safe installation of electrical equipment in residential, commercial, and industrial locations. Students determine the 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 and electrician apprentices.

ELE 211 Basic Electronics**4 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; Academic Math Level 3; ELE 111 minimum grade "C-"**60 lecture, 30 lab, 0 clinical, 0 other, 90 total contact hours**

In this basic electronics course, students are introduced to solid state devices. Topics will include the theory and application of diodes, bipolar transistors, field effect transistors, thyristors and operational amplifiers. Using common laboratory equipment, students will build and test circuits.

ELE 224 Programmable Controllers (PLCs) I**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 is an introductory, lab-based course which covers PLC hardware, and relay-type, timer, counter, data manipulation, math and program control instructions, with an emphasis on troubleshooting. Weekly labs use Allen Bradley SLC, PLC-5 and ControlLogix controllers and RSLogix software. This course is intended for Industrial Electronics and Mechatronics students, electricians, electrician (and other) apprentices, technicians and engineers. The title of this course was previously Introduction to PLCs.

ELE 254 Programmable Controllers (PLCs) II**4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
Level II Prerequisites: ELE 224 minimum grade "C-"; Academic Math Level 3
60 lecture, 30 lab, 0 clinical, 0 other, 90 total contact hours

This is an advanced, lab based course in PLC system hardware, software and troubleshooting. Topics include analog I/O, data manipulation, PID process control, data communications (DeviceNet and EtherNet/IP), and HMIs. Labs use A-B SLC-5/04 and ControlLogix controllers, and RSLogix software. This course is intended for Industrial Electronics and Mechatronics students, electricians, electrician (and other) apprentices, technicians and engineers. The title of this course was previously PLC Applications.

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.

Engineering Technology**EGT****EGT 100 Introduction to Product Design****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 focus on the history of product design and the journey to product development. Students will generate concepts by designing a physical product for production by establishing engineering specifications using media investigation and material application. Students will focus on user centric design processes and critique design details and assemblies.

EGT 125 Advanced Engineering Design Technology**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

Advanced fundamentals of creating 3D parametric models using graphic environment. This course will focus on parts, assemblies and drawings.

EGT 150 Engineering Design Technology Material Science**3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 3
45 lecture, 15 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students will be introduced to the structures and properties of metals, ceramics, polymers, wood, composites, and electronic materials. Students will also gain an understanding of the processing and design limitations of materials. Topics fundamental to the further study of material procurement, testing and failure will be emphasized as a foundation to engineering design technologies.

EGT 175 Engineering Design Technology Material Processing**3 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; Academic Math Level 3; EGT 150 minimum grade "C", may enroll concurrently**30 lecture, 30 lab, 0 clinical, 0 other, 60 total contact hours**

In this course, students will apply the principles of basic sciences and engineering to understanding the behavior of materials, their development and applications and to show an understanding of material processing technology for the manufacture of products. Students will also have an understanding of the processing factors that influence selection in design.

English**ENG****ENG 000 Writing Center****0 credit****0 lecture, 15 lab, 0 clinical, 0 other, 15 total contact hours**

In this course, students complete a series of writing assignments designed specifically for their course and writing level. Writing Center tutors and instructors evaluate each assignment based on assignment objectives and encourage revision when necessary. ENG 000 is a required co-requisite for all students enrolled in ENG 050, 051, 090, 091, 100, 111, and ESL 168.

ENG 050 Basic Writing I**4 credits****Level I Prerequisites:** Academic Reading Levels 3 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 the student's Academic Writing level to 3.

ENG 075 Basic College Reading and Writing**6 credits****Level I Prerequisites:** Academic Reading Level 3; Academic Writing Level 2**90 lecture, 0 lab, 0 clinical, 0 other, 90 total contact hours**

This class is not intended for students who speak English as a second language. Students will identify and develop the essential skills for academic success: comprehensive textbook reading skills, vocabulary development, time management, note-taking, test-taking, 21st century literacies, and confidence writing formal English sentences and paragraphs. Satisfactory/unsatisfactory grading will be used. Satisfactory completion of ENG075 will advance students' reading and writing levels to 5 and 3 respectively.

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

In this course, students focus 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, where the students focus 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 students' 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, résumés, 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.

ENG 107 Technical Writing Fundamentals**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 write audience-focused documents such as memos, technical definitions and descriptions, instructions, reports, and presentations. At the end of the semester, each student prepares an electronic portfolio of technical writing assignments. (During the first week of class, students must demonstrate a writing proficiency at the college level.) The title of this course was previously Technical Writing I.

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

In this course, students will write effective academic essays using a variety of rhetorical patterns for various purposes and 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 in documented essay writing by the end of the semester.

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

In this course, students will develop 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 and historical contexts. They will practice using literary terms in interpreting a variety of texts across genre and mode, in writing and discussion. 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, and popular fiction.

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

In this course, students will survey the African-American experience in the world of literature. They will be introduced African-American thought through readings of authors of African descent in poetry, fiction, drama, autobiography and essay. Students will apply critical thinking skills to assess literary works.

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

In this course, students will read, explore and analyze the varieties of Shakespeare's works. Genres, styles, and language will be discussed. Students will analyze the major themes that inform the nature and variety of human experiences. Students will apply critical thinking skills to interpret and evaluate these literary works.

ENG 208 Technical Writing for Print Delivery**3 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; ENG 107 minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students learn how to manage, design, write, and edit technical documentation. At the beginning of the project, students create a project plan, schedule, and design template that will guide them through the writing and editing phases of their project. The final document (3,000 word min.) will be published in PDF format. In addition, students research a current issue in the field of technical communication. At the end of the course, students create an electronic portfolio to showcase their work. The title of this course was previously Technical Writing II.

ENG 209 Technical Writing for Online Delivery**3 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; ENG 107 minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this hands-on course, students explore the concepts and challenges of single sourcing and topic-based authoring. Building on writing and project management skills learned in the prerequisite course, students use industry standard software such as MadCap Flare and Adobe RoboHelp to create technical information that can be customized for online, and mobile device delivery. The title of this course was previously Technical Writing III.

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

In this course, students will explore literary works of the U.S. from the 17th century to 1900. Students will examine literary techniques, vocabulary and features significant to early American works written before 1900. Throughout the course, students will assess period works using literary vocabulary and applying critical thinking skills. Authors covered in the course could include figures such as Walt Whitman, Ralph Waldo Emerson, and Henry David Thoreau.

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 read and analyze western world literature masterpieces, including fiction and nonfiction, written from the time of ancient Greece through the Renaissance. Students will apply critical thinking skills to analyze literary works in both classroom discussions and written essays.

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 for eLearning**3 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; ENG 107 minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this hands-on course, students plan, design, write, edit and publish screencasts (video screen captures) of software simulations and demonstrations that might be used in technical training or eLearning. Students use screencasting software (such as Adobe Captivate or MadCap Mimic) to complete their projects, which include scripted narration. Planning documents and final screencasts are posted online. The title of this course was previously Technical Writing IV.

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

In this course, students will analyze 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). They will practice using literary terms in interpreting a variety of texts across genre and mode, in writing and discussion. Students will be expected to analyze fiction critically in class discussions and through formal and informal writings.

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

In this course, students will read, explore, and analyze the varieties of great literary works of the Western tradition since the Renaissance and demonstrate how these works have contributed to present cultural heritage. Genres, styles, and language will be discussed. Students will apply critical thinking skills to interpret and evaluate these 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 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 examines literature for children from birth to age 13. It explores children's books from a variety of genres, including fantasy, folklore, realistic fiction, poetry, and nonfiction. Students will learn about important authors and illustrators of quality children's books and how to incorporate these books in lessons and activities with children. This course meets requirements for students entering early childhood education, elementary education, and secondary education. It is also beneficial for parents, social workers, library study students, or others interested in learning about children's books.

ENG 242 Diverse 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 examines and critiques diverse books for children from birth to age 13. Students explore children's books about culture, religion, race, gender, sexuality, disability, and socio-economic status. Students will learn about important authors and illustrators of diverse books and how to incorporate these books in lessons and activities with children. This course meets requirements for students entering early childhood education, elementary education, and secondary education. It is also beneficial for parents, social workers, library studies students, or others interested in learning about diverse books for children. The title of this course was previously Multicultural Literature for Youth.

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 develop a successful job search strategy. Topics covered include developing a systematic job search process, researching companies, preparing job search documents (such as a cover letter and résumé), and developing effective interviewing skills. Students also learn the benefits of preparing a portfolio (or other work samples) to share with prospective employers.

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

In this course, students will be introduced to various writing techniques as a means to self-discovery, self-awareness and expression. Students will compose writing that will add to their understanding and appreciation of their personal story(ies) and challenges, in addition to fostering creativity and problem-solving. Students will be expected to spend a substantial amount of time journaling outside of class. Journals remain confidential. Some self-selected journal entries are shaped into polished, creative pieces meant for sharing with others. Students will be expected to provide feedback to one another in a respectful and helpful manner.

ENG 261 Journal Workshop II**3 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; ENG 260 minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students will apply their knowledge of various writing techniques to continue their self-discovery, self-awareness and expression through journaling. They will become more adept at choosing an effective writing technique that aligns with their goal. Students will be expected to spend a substantial amount of time journaling outside of class. Journals remain confidential. Students will work on individual projects and some self-selected writings will be shaped into polished, creative pieces meant for sharing with others. Students will be expected to provide in-depth feedback to one another in a respectful and helpful manner.

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.

English as a Second Language**ESL****ESL 023 High Beginning ESL Reading and Writing****4 credits****Level I Prerequisites:** ESL GVR Level E-1 and ESL Listening Level E-1
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students will 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.

ESL 024 High Beginning ESL Grammar and Communication**4 credits****Level I Prerequisites:** ESL GVR Level E-1 and ESL Listening Level E-1
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students will move beyond minimal survival English toward communication of daily living. This class is designed for students who have had some exposure to and/or instruction in English. Grammar and communicative competence are emphasized. This class can be taken concurrently with ESL 023 and ESL 025.

ESL 025 High Beginning ESL Listening and Speaking**4 credits****Level I Prerequisites:** ESL GVR Level E-1 and ESL Listening Level E-1
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students will 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. This course contains material previously taught in ENG 025 High Beginning ESL Listening and Speaking.

ESL 128 Low Intermediate ESL Reading and Writing**4 credits****Level I Prerequisites:** ESL GRV Level E-2 and ESL Listening Level E-3
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students will lay the foundations for reading and writing improvement needed at the intermediate ESL level. 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.

ESL 132 Intermediate ESL Grammar**4 credits****Level I Prerequisites:** ESL GRV Level E-2 and ESL Listening Level E-3
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

In this intermediate level course, students expand upon their 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.

ESL 134 Intermediate ESL Reading**4 credits****Level I Prerequisites:** ESL GVR Level E-3 and ESL Listening Level E-3
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students further develop independent reading comprehension skills for ESL. 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.

ESL 135 English Listening, Pronunciation and Conversation (ESL)**4 credits****Level I Prerequisites:** ESL GVR Level E-3 and ESL Listening Level E-3; Students with ESL Reading Level E-2 may enroll in ESL 128 concurrently**60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours**

In this course, students will 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; and introduction to and practice with appropriate conversational skills, such as offering, accepting, and refusing invitations, and asking for and giving opinions.

ESL 138 Intermediate ESL Writing**4 credits****Level I Prerequisites:** ESL GVR Level E-4 and ESL Listening Level E-3; Students with ESL GVR Level E-3 may enroll in ESL 132 and ESL 134 concurrently**60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours**

In this course, students learn to internalize both the grammar and vocabulary that they have been studying by using it to produce well-formed sentences and paragraphs. The focus is on strengthening the students' ability to express themselves in written English.

ESL 161 Advanced ESL Grammar**4 credits****Level I Prerequisites:** ESL GVR Level E-4 and ESL Listening Level E-4 and ESL 138 minimum grade "C" may enroll concurrently; Students with ESL Listening Level E-3 may enroll in ESL 135 concurrently**60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours**

In this course, 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. Successful completion of ESL 161 is required for progressing into classes with native speakers.

ESL 165 Advanced ESL Speaking, Listening and Pronunciation**4 credits****Level I Prerequisites:** ESL GVR Level E-4 and ESL Listening Level E-4**60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours**

In this course, international students will develop the listening, note taking and speaking skills needed for success in American college classrooms. Instructional activities will include a variety of formal speech acts, such as introducing, announcing and negotiating. In addition to mastering English Phonemes and suprasegmentals, students will focus on correct pronunciation of high-level vocabulary from the Academic Word List in the context of formal speaking. In this course, international students will develop the listening, note taking and speaking skills needed for success in American college classrooms. Instructional activities will include a variety of formal speech acts, such as introducing, announcing and negotiating. In addition to mastering English Phonemes and suprasegmentals, students will focus on correct pronunciation of high-level vocabulary from the Academic Word List in the context of formal speaking. The title of this course was Advanced ESL Speaking and Listening and this course contains material previously taught in ENG 065 Advanced ESL Speaking and Listening.

ESL 168 Advanced ESL Writing**4 credits****Level I Prerequisites:** ESL GVR Level E-5 and ESL Listening Level E-4 or ESL 161 minimum grade "C"; Students with ESL GVR E-4 and Listening Level E-4 may enroll in ESL 161 concurrently or Students with ESL 138 minimum grade "C" and concurrent enrollment in ESL 161**Corequisites:** ENG 000**45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours**

In this course, students focus on strengthening the academic writing skills needed for American college courses. Emphasis will be on developing ideas in paragraphs and essays. Students will engage in rigorous study of academic vocabulary needed for college-level writing. Students must also enroll in ENG 000. Successful completion of this course with a minimum grade of "C" will raise students' Academic Writing level to 6.

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

In this introductory science course, students will be introduced to the physical processes that affect the environment, the impact of people on the environment and the physical resources in our environment. They 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 and sustainability, 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 174 ENV 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.

ENV 199 ENV Internship Education**1-3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 2; ENV 101 and ENV 105, minimum grade "C" ; consent required
0 lecture, 0 lab, 0 clinical, 0 other, 0 total contact hours

In this course, students gain skills through an approved environmental science work experience. Students will have obtained a work experience position in order to register for this course. Together with the instructor and the employer, students establish learning objectives to connect classroom learning with career-related work experience. This class does not meet in person regularly. Most communication is via e-mail with some in-person meetings with the instructor required.

Facility Management**FMA****FMA 130 Introduction to Facility and Energy Management****3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 3
45 lecture, 15 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students will be introduced to the roles and responsibilities of Facility and Energy Management. In a living lab atmosphere, students will be given real life scenarios to troubleshoot actual building, energy and profitable solutions.

FMA 150 Energy Management Principles**3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 3; FMA 130 minimum grade "C"
45 lecture, 15 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students are introduced to principles for energy management of light industrial, commercial and multifamily structures. Real world applications are highlighted, including understanding utility usages and costs, identifying and qualifying energy saving opportunities and determining return on investments.

FMA 170 Building Sustainability LEED**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 leadership in energy and environmental design course, students will receive a complete review of the LEED rating systems and strategies for building sustainability. Understanding of the building process and how LEED is verified throughout the design, construction and commissioning of a structure using the USGBC project checklists and documentation of commercial buildings. Through this course, students will be prepared to take one or more of the LEED accredited professional exams.

FMA 190 Introduction to Mechanical, Plumbing and Electrical**3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 3; FMA 150 minimum grade "C"
45 lecture, 15 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students are introduced to the mechanical, electrical and plumbing systems used in light industrial, commercial and multi-family buildings. Issues of history, ideology and sustainability will be discussed as it pertains to the management of facilities with mixed systems and the way these systems interact with building design.

Film**FLM****FLM 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. This course was previously HUM 120.

FLM 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. This course was previously HUM 150.

FLM 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

In this course, students are introduced to the development of American cinema from its beginnings in 1891 to the present. The films viewed are discussed in terms of technique as well as in terms of content. The course relates American cinema to themes in American culture. Students will explore changes in the films and industry influenced by cultural values, legal decisions and emerging technologies. This course was previously HUM 160.

FLM 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. This course was previously HUM 170.

FLM 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. This course was previously HUM 185.

FLM 220 Great Directors**3 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; FLM 120 and FLM 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. This course was previously HUM 220.

FLM 221 Film and Representation**3 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; FLM 120 and FLM 160, minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students will study the way American films have represented race, class, gender, sexuality and ability throughout history. Students will critically evaluate various representations of diversity within American film. Additionally, they will gain insight into the ways in which cinematic images of different minority groups shape the way in which people are perceived in everyday life. Instruction will emphasize the acquisition of analytical skills relevant to film and cultural studies. This course was previously HUM 221.

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

In this class, students are introduced to the fundamental principles of fluid power in 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. 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

In this course, students will expand on the foundation developed 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. Students will develop skills in a hands-on lab environment with tasks such as building fluid power circuits and the disassembly and inspection of hydraulic components. 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

In this course, students will explore the advanced concepts of directional, pressure and flow controls covered in the introductory courses. Troubleshooting and reading of hydraulic blueprints are 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 course. 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**

In this course, students will be introduced to the operation and practical use of compressors, air distribution systems, actuators, directional valves and other controls used in automation. In addition, students will focus on the design of pneumatic control and power circuits using ANSI and ISO symbols and the moving part logic technique (pneumatic ladder logic). Students with other technical experience may request an override from the instructor.

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 course is a continuation of First Year French, in which students learn more advanced verb tenses and sentence construction. Through classroom activities, students improve their listening comprehension, reading, writing and communication skills in French, which help them acquire basic conversational tools of the language. Students also explore the diverse cultures of French-speaking countries.

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 introductory course in World Regional Geography 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

In this course, students will gain 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

In this course, 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**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 be introduced to the fundamental geological processes and concepts that created the parks and monuments of the United States. The course will explore the various geologic features through time, preserved by the National Park Service, with a focus on the interconnectivity and evolution of various systems that led to these geologic formations.

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

In this course, 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 125 The Earth Through Time**3 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

Earth is a dynamic planet and has undergone many changes since its inception, and this will continue well into the future. In this course, students will use geologic principles, such as relative and absolute dating, stratigraphic principles, and plate tectonics to reconstruct and understand the geological history and possible future of Earth and its organisms. The course will include a close look at the geologic time scale and will explore the origins of the Universe, Solar System, as well as Earth's moon, atmosphere, and oceans. This course was previously titled Historical Geology.

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
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students are introduced 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"
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 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 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

In this course, students are introduced to the primary features and uses of Adobe Photoshop image-editing software. Lectures, demonstrations, exercises and imaging projects equip students in 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.

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"
45 lecture, 0 lab, 0 clinical, 45 other, 90 total contact hours

In this course, students explore intermediate 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 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 215 Typography II**4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; GDT 100

60 lecture, 0 lab, 0 clinical, 30 other, 90 total contact hours

In this course, students will deepen their knowledge of typography by exploring advanced typography concepts such as grid systems; complex hierarchy; refinement of text and display type; typography for screen-based media such as web, film, and television; experimental typography; by using type 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 104 minimum grade "C+" 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 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

In this course, students will combine typography, color, images, layout, and strong, researched-based concepts to build cohesive design systems. Using the Adobe Creative Suite, the real-world, client-based projects will encourage students to explore and develop a design theme through a series that may include writing a design proposal, brand identity development, package design, and publication design for both screen and print.

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 employment in graphic design. Topics covered include graphic design career options/specialties, job-hunting skills/techniques, freelancing, resume preparation, portfolio and self-promotion material preparation. At the end of the course, graphic design professionals review student portfolios. This course should be taken during the final semester prior to graduation.

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

In this course, healthcare professionals are introduced to terminology used in the workplace. Medical terms pertaining to anatomy, clinical concepts, disease, diagnosis, treatment, surgery, drugs, and medical procedures are emphasized.

HSC 103 Healthcare Exploration**1 credit****Level I Prerequisites:** Academic Reading and Writing Levels of 3
15 lecture, 0 lab, 0 clinical, 0 other, 15 total contact hours

In this course, students are introduced to careers in the healthcare field and to the programs offered at Washtenaw Community College. Students will complete a self-assessment, make a career choice, and develop a comprehensive personalized educational plan for a healthcare career. This course will explore essential skills, such as collaboration, communication, problem solving, decision making, and accepting personal responsibility. Students will have the opportunity to connect with healthcare professionals and students in WCC healthcare programs.

HSC 124 Medical Terminology**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 presented with a comprehensive study of the origins and building blocks of medical terminology. Students divide medical terms by studying prefixes, combining forms and suffixes. In addition, common abbreviations and drugs are explored. The organization of body systems, disease states, and the definitions of useful diagnostic and procedural terminology are discussed to treat human body diseases.

HSC 131 CPR/AED and First Aid**1 credit****Level I Prerequisites:** No Basic Skills
15 lecture, 0 lab, 0 clinical, 0 other, 15 total contact hours

In this CPR/AED first aid training program, students prepare to respond to injuries and sudden illness. Students develop the knowledge to prevent injuries and skills necessary to recognize and provide basic care for injuries and sudden illness. The course includes adult CPR/AED, child and infant CPR and first aid. Students who complete the course and pass the exam and checkoff may select either the American Heart Association (AHA) or the American Red Cross (ARC) certificate. The title of this course was previously CPR/AED for the Professional Rescuer 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 review program to prepare students to respond to sudden illness. This course provides students with the knowledge to prevent injuries and skills necessary to recognize and provide basic care for sudden illness. The course includes adult CPR/AED and child and infant CPR. Students who complete the course and pass the exam and checkoff will be awarded the American Red Cross certificates.

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**

In this course, students are introduced to the 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**60 lecture, 30 lab, 0 clinical, 0 other, 90 total contact hours**

This course introduces the concept of thermodynamics and principles of refrigeration. Major units covered include 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 A/C systems and components will be provided from an operation and service perspective. HVAC mathematics will be introduced and used to convert temperatures between Fahrenheit and Celsius.

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**

In this course, students receive 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"**45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours**

In this course, students build on the heating system skills and knowledge learned in prerequisite courses. Major units covered include HVAC 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.

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"**45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours**

In this course, students review basic electrical and refrigeration principles needed for maintaining and troubleshooting equipment. Sequence of operational mechanical and electrical failures is covered for residential and light commercial equipment. This includes logical diagnostic techniques which are simulated on both computer simulators and live lab equipment.

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**

In this course, 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, 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, airflow, 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 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 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

In this course, 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.

History**HST****HST 108 The Ancient and Medieval 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

In this introductory survey course, students will examine the history of world civilizations (Africa, Asia, Europe, and the Americas) from ancient times to 1500. The course will emphasize the diversity of world cultures, while also highlighting how the various societies of the world were interconnected. Students will investigate the essential social, cultural, political, economic and religious developments around the globe, and cover fascinating topics such as the Egyptian Pyramids, the Trojan War, Alexander the Great, Hinduism, Buddhism, the Great Wall of China, Terra-Cotta Warriors, the Roman Empire, Vikings, Samurai Warriors, Islam, Christianity, the Crusades, the Aztecs, and the Renaissance.

HST 109 The Early Modern 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

In this introductory survey course, students will examine the history of world civilizations (Africa, Asia, Europe, and the Americas) from 1500 to 1900. The course will emphasize the diversity of world cultures, while also highlighting how the various societies of the world were interconnected. Students will investigate the essential social, cultural, political, economic and religious developments around the globe, and cover fascinating topics such as the Reformation, the Ming Dynasty, the Aztecs and Incas, the Ottoman Empire, the Scientific Revolution, the Enlightenment, the French Revolution, the Atlantic Slave Trade, Simon Bolivar and Latin American Independence, the Industrial Revolution, the Meiji Restoration, the Scramble for Africa, the Opium War, the Boxer Rebellion and the Women's Rights Movement.

HST 121 Ancient and Medieval Europe**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 survey course, students will examine the history of Europe and the Mediterranean during ancient and medieval times. They will investigate the essential social, cultural, political, economic and religious developments of the period, and cover fascinating topics such as the Trojan War, the Spartans, Alexander the Great, Spartacus, Julius Caesar, the Roman Empire, Constantine, the Huns, the Goths, St. Patrick, Charlemagne, the Vikings, the Crusades, Richard the Lionheart, Magna Carta, the Black Death and the Renaissance. The title of this course was previously Western Civilization I.

HST 122 Early Modern Europe**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 survey course, students will examine European history from the sixteenth through the nineteenth century. They will investigate the essential social, cultural, political, economic and religious developments of the period, and cover fascinating topics such as the Reformation, Henry VIII, Mary Queen of Scots, Christopher Columbus, Queen Elizabeth I, Oliver Cromwell, the Scientific Revolution, the Enlightenment, Adam Smith, the French Revolution, Napoleon, the Industrial Revolution, Karl Marx, Charles Darwin and the Women's Rights Movement. The title of this course was previously Western Civilization II.

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

In this course, students will be introduced to 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 historical 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 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

In this course, students trace the history of U.S. foreign policy from the Revolutionary era to the present. They explore 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 will address the relationship between the American economic, social, and political systems and the nation's military, as well as the impact of the nation's geography on the military's organization and mission. Key conflicts will receive detailed attention 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

In this course, students will explore the causes, conduct and impact of the American Civil War. The course focuses on the political, social, economic, and racial background of the conflict, the conduct of 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. It will assess the impact of the war on the nation's society, political system, and economy.

HST 225 World War 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 will explore the causes, conduct, and consequences of the Second World War. It will begin by addressing the settlement that ended the Great War, the rise of fascism in Europe and militarism in Japan, and interwar military developments. The course will then trace the events that led to war in Asia and in Europe. The course's centerpiece will be a consideration of the war's conduct. Military issues, both tactical and strategic, will be addressed, as will the economic, diplomatic, and political forces that shaped the conflict. The course will conclude with a consideration of the troubled peace that followed, focusing on the events that led to the outbreak of the Cold War.

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

In this course, students investigate the origins, development and legacies of the Nazi onslaught against the European Jews from 1933 to 1945. Topics such as anti-Semitism, Nazi ideology and propaganda, Jewish experiences, World War II, and the post-war impact of the Holocaust will be discussed.

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 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

In this course, students explore the evolution of the conduct of war in the western world from the sixteenth century to the present. Points of emphasis include the relationship between politics and war and between societies and their military institutions; the influence of political, social, economic, and technological change upon western methods of warfare; and the impact of the popularization and nationalization of war upon western nations' approach to modern conflicts. The conduct of specific wars, campaigns, and battles are addressed, but they are employed to illustrate these themes and are not, in and of themselves, the focus of the course.

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

In this introductory survey course, students will examine the history of England (as well as Ireland, Scotland and Wales) from ancient times to the early modern period. They will investigate the essential social, cultural, political, economic and religious developments of the British Isles during this period, and cover fascinating topics such as the Celts, the Druids, the Anglo-Saxons, Alfred the Great, the Vikings, William the Conqueror, the Battle of Hastings, Richard the Lionheart, Magna Carta, Parliament, the Hundred Years' War, the Wars of the Roses, Henry VIII, the Reformation, Elizabeth I, Mary Queen of Scots, the English Civil War and Oliver Cromwell.

HST 290 International Studies in History**3 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; consent required
15 lecture, 60 lab, 0 clinical, 0 other, 75 total contact hours

This course offers students the opportunity to study history abroad. A week of daily lectures at WCC will provide the necessary context for understanding the history and culture of the study abroad location. These lectures will be followed by 1-2 weeks of international travel during which students will visit various historical sites and museums. This travel will provide students with an opportunity to acquire not only an in-depth understanding of the history of the study abroad location, but also an appreciation for the local culture and people that is at the heart of international study and cultural immersion. The course will be offered either as a stand-alone history course or in conjunction with ANT 290.

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.

HSW174 HSW 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, human service-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.

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.

HSW220 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

In this course, students are introduced 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.

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 home-based 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.

HSW229 Human Services Success Skills**1 credit****Level I Prerequisites:** Academic Reading and Writing Levels of 6; HSW 100, HSW 200 and SOC 220 or HSW 220; minimum grade "C" all HSW and SOC requirements; HSW 200 and SOC 220 or HSW 220 may enroll concurrently**15 lecture, 0 lab, 0 clinical, 0 other, 15 total contact hours**

In this course, students review and evaluate necessary skills that will be utilized in human services employment settings. Topics covered will include ethics, data collection, professional behavior, documentation, employment opportunities and several other areas of professional concern.

HSW230 Field Internship and Seminar I**3 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; HSW 100, HSW 200, HSW 220 or SOC 220 and HSW 229; minimum grade "C" all HSW and SOC requirements; consent required; students must secure placement and submit required paperwork to be considered for permission to enroll**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.

HSW296 Neuropsychology of Addiction**3 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6**Level II Prerequisites:** Both PSY 100 and BIO 101 or BIO 102 are strongly recommended**45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours**

In this course, students will study the basic principles of pharmacology, including both pharmacokinetics and pharmacodynamics, and the application of these principles to addictive drugs. In particular students will focus on the functioning of the nervous system with an emphasis on neurotransmission, the evolution of our understanding of the biological mechanisms of addiction, and various physiological effects, including the mechanism of action of both legal and illegal psychoactive drugs.

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****HUM 101 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**

In this course, students are introduced to various cultures and cultural periods from the dawn of human creativity through the Middle Ages. They explore 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 five cultures through various interdisciplinary media. Cultures: Prehistory, Mesopotamia, Egypt, Aegean, Greece, Rome, Middle Ages. Disciplines: History, Visual Arts, Architecture, Literature, Philosophy, Music, and Religion.

HUM 102 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**

In this course, students are introduced to various cultural periods from 1250 through the late 19th Century. Students explore the creative disciplines of human artistic output focusing on the cultural development of the Western World. This course may be presented in chronological or topical format. Classes will cover a minimum of five cultures through various interdisciplinary media. Periods: Renaissance, Mannerism, Baroque, 18th Century (Rococo, Neoclassicism, Romanticism, Realism), 19th Century (Academic Art, Impressionism). Disciplines: History, Visual Arts, Architecture, Literature, Philosophy, Music and Religion.

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**

In this course, students are introduced 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 eight 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.

HUM 145 Comparative Religions**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 introduce, examine, and compare the central beliefs, concepts, practices, texts, and histories of a variety of the world's major religious traditions. This course will cover Hinduism, Buddhism, Judaism, Christianity, and Islam. One or more of the following other religions may be covered as well: Indigenous Sacred Ways, Daoism, Confucianism, Shinto, or Sikhism.

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**

This course will introduce, examine, and compare myths from around the world, focusing on myths that have significantly informed Western civilization. Myths are read as stories which communicate the culture's understanding of themselves, their gods and goddesses, their society, their values, and their physical environment. Cross-cultural comparison will be made on how core themes such as creation, destruction, deity, the afterlife, and heroes are understood. This course will cover classic Greek and Roman myths. Myths from three or more of the following other cultures will be covered as well: Egyptian, Mesopotamian, Celtic, Norse, African, or Medieval European.

HUM 175 Arts and Cultures of Islam**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 the rich history and contributions of Islamic Cultures from the 6th Century to the present. The spread of Islam will be studied against the backdrop of the contemporary Byzantine and Persian Empires. Cultural exchange and culturally unique developments in the arts and architecture will be traced. Students will gain an introductory understanding of the main tenets of Islam; Mohammed, the founder of Islam; and the various sects and manifestations of Islam. This course is geared towards students with an interest in arts, cultures, religions, and history as well as those who want to gain a deeper understanding of the contemporary world. The title of this course was previously Arts and Cultures of Middle East.

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 is 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 Construction 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 217 Introduction to 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 such as profiles, obituaries, and human interest stories with an emphasis on various feature writing and reporting techniques. These may include narrative leads, circle kickers, interviews with multiple sources, online research and crowd-sourcing using social media. Media law and ethics are also examined.

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.

Machine Tool Technology**MTT****MTT 102 Machining for the Technologies****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 provides an introduction to basic machine tool operations. 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 contour band saw, vertical milling machine and turning on lathe.

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 "C"
15 lecture, 30 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students enrolled in other courses are given 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; MEC 101 minimum grade "C", may enroll concurrently; MTT 102 minimum grade "C"
45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

This course is a second level course in machine tool operation. Topics that will be covered include: safety, precision measurement, feeds and speeds, rotary tools and turning tools. In addition to the above, students will gain valuable "hands-on" experience learning advanced 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 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.

Magnetic Resonance Imaging**MRI****MRI 101 MRI Safety****2 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to Magnetic Resonance Imaging (MRI) program.
Corequisites: MRI 125
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

In this course, students are introduced to the principles of Magnetic Resonance Imaging (MRI) safety for the patient as well as occupational and ancillary personnel. The potential hazards and biological effects associated with the MRI environment and MRI procedures will also be discussed. Topics include magnetism, properties of magnetism, MR system components, MR magnets, radio frequency (RF) systems, gradient systems, system shielding, patient screening, contrast agents, and safety zones.

MRI 110 MRI Physics I**3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to Magnetic Resonance Imaging (MRI) program
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students are introduced to the physical principles of Magnetic Resonance Imaging (MRI), including the basic physics of MRI. Topics include magnetism, MRI signal production, image contrast, spatial localization including k-space filling, and an introduction to pulse sequence diagrams.

MRI 120 MRI Procedures I**3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to Magnetic Resonance Imaging (MRI) program
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students learn the Magnetic Resonance Imaging (MRI) scanning procedures for the central nervous and musculoskeletal systems. Topics include scanning pulse sequences, positioning and patient care, sectional anatomy, and pathology. Anatomical structures and the plane that best demonstrates anatomy will be discussed as well as signal characteristics of normal and abnormal structures.

MRI 125 MRI Clinical Education I**3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to Magnetic Resonance Imaging (MRI) program
Corequisites: MRI 101
0 lecture, 0 lab, 360 clinical, 0 other, 360 total contact hours

This is the first clinical course for certified radiologic technologists ARRT (R), who are admitted to the Magnetic Resonance Imaging (MRI) program. Students will be introduced to the clinical practice of MRI with emphasis on basic magnetic resonance (MR) scan procedures, MRI safety and patient care. This course requires a 15 week, 24-hours/week clinical rotation under the supervision of a certified MRI technologist.

MRI 130 MRI Physics II**3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to Magnetic Resonance Imaging (MRI) program; MRI 110 minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students learn advanced physical principles of Magnetic Resonance Imaging (MRI). Topics include maximum intensity projection image formation, diffusion and perfusion, fundamentals of flow including types of flow, flow motion correction, vascular imaging, imaging parameters and tradeoff, artifacts and compensations.

MRI 135 MRI Quality Assurance**1 credit**

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to Magnetic Resonance Imaging (MRI) program
15 lecture, 0 lab, 0 clinical, 0 other, 15 total contact hours

In this course, students receive a comprehensive overview of the Magnetic Resonance Imaging (MRI) quality assurance program. Topics include the qualifications of personnel, the quality control program, safety policies and image quality specific to MRI.

MRI 140 MRI Procedures II**3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to Magnetic Resonance Imaging (MRI) program; MRI 120 minimum grade "C"
Corequisites: MRI 145
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students learn the Magnetic Resonance Imaging (MRI) scanning procedures for the chest, abdomen, and pelvis. Topics include scanning pulse sequences, positioning and patient care, sectional anatomy, and pathology. Anatomical structures and the plane that best demonstrates anatomy will be discussed as well as signal characteristics of normal and abnormal structures.

MRI 145 MRI Clinical Education II**3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to Magnetic Resonance Imaging (MRI) program; MRI 125 minimum grade "C"
Corequisites: MRI 140
0 lecture, 0 lab, 360 clinical, 0 other, 360 total contact hours

This is the second clinical course for certified radiologic technologists ARRT (R), who are admitted to the Magnetic Resonance Imaging (MRI) program. Students will observe, assist, and perform basic patient care and MRI clinical procedures under direct supervision. Students are expected to gain practical experience and demonstrate competency in MR scanning techniques, safety procedures, image evaluation, image post processing, and patient care. This course requires a 15 week, 24-hours/week clinical rotation under the supervision of a certified MRI technologist.

MRI 160 MRI Advanced Imaging Procedures**3 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; Admission to Magnetic Resonance Imaging (MRI) program**Corequisites:** MRI 165**45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours**

In this course, students learn advanced Magnetic Resonance Imaging (MRI) scanning procedures to date. Topics include breast MRI including dynamic contrast enhanced MR of the breast, cardiac MR including myocardial perfusion and cardiac stress MR, function and functional MR, MR enterography (MRE), colonography, molecular MR imaging and MR elastography.

MRI 162 MRI Pulsed Sequence, Imaging Options, and Parameters**2 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; Admission to Magnetic Resonance program**30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours**

In this course, students learn the parameters and imaging options necessary to create quality magnetic resonance (MR) images. Topics include magnetic resonance (MR) pulse sequences, image formation, and image contrast. The pulse sequences covered are spin echo, fast spin echo, gradient echo, inversion recovery, echo planar, parallel imaging, and spectroscopy. Tissue characteristics, contrast agents, and post-processing techniques are also covered.

MRI 165 MRI Clinical Education III**3 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; Admission to the Magnetic Resonance Imaging (MRI) program; MRI 145**Corequisites:** MRI 160**0 lecture, 0 lab, 320 clinical, 0 other, 320 total contact hours**

This is the third clinical course for certified radiologic technologists ARRT (R), who are admitted to the Magnetic Resonance Imaging (MRI) program. Students are expected to independently perform patient care and MRI clinical procedures under indirect supervision. Students are required to complete all mandatory and elective clinical competency required by the ARRT. This course requires a 10 week, 32-hours/week clinical rotation under the supervision of a certified MRI technologist.

Mathematics**MTH****MTH 067 Foundations of Mathematics****4 credits****Level I Prerequisites:** Academic Reading Level 5 or higher; no minimum writing level; Academic Math Level no higher than level 2**60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours**

In this developmental math course, students learn 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. Students who successfully complete this course with a minimum grade of "C" will raise their Academic Math level to 2.

MTH 094 Pathways to Math Literacy**4 credits****Level I Prerequisites:** Academic Reading Level 5 or higher; no minimum writing level; Academic Math Level 2**60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours**

In this course, students will learn about data, numbers and patterns, unit conversions, basic probability, dimensional analysis, algebraic equations as a problem-solving tool, linear and non-linear relationships, standard deviations and the normal curve. Pythagorean Theorem and the distance formula are also covered. Microsoft Excel is used as a tool for data analysis, calculation and display. It is structured in a non-lecture format. Group work and participation will be required each day of class with problem solving and applications. Short technology assignments will be aligned with each lesson. Successful completion of this course with a minimum grade of "C" will raise your Academic Math level to 3. This course is not intended for those students planning to go on to the precalculus/calculus sequence. Those students should take MTH 097 instead.

MTH 097 Foundations of Algebra**4 credits****Level I Prerequisites:** Academic Reading Level 5; no minimum writing level; Academic Math Level 2**60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours**

In this developmental math course, students will focus on algebra. Topics include linear functions, polynomials and systems of linear equations. Successful completion of this course with a minimum grade of "C" will raise your Academic Math level to 3.

MTH 099 Math Placement Acceleration Lab**1 credit****Level I Prerequisites:** Academic Reading Level 3 or higher; no minimum writing level; Students must have taken the ALEKS PPL placement test in the testing center before the class start date.**15 lecture, 0 lab, 0 clinical, 0 other, 15 total contact hours**

This class is intended to give students an opportunity to increase their math placement test score. Students will work using an online system to practice skills then retest. Instruction will be provided as needed on a one on one basis in a classroom/lab setting with a math instructor.

MTH 125 Everyday College Math**4 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; Academic Math Level 3 or MTH 094 or MTH 097, minimum grade "C"**60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours**

In this course, students will further their knowledge of mathematical concepts and applications they might encounter in everyday adult life. Students will explore the following topics: investing and borrowing, home loans, student loans, sets, Venn diagrams, functions, probability and statistics. The following outcomes will be addressed: interpretation of mathematical information; representation of mathematical information; calculation and communication of results; application of information, which includes making judgments and conclusions based on quantitative analysis of data; and communication of information, which includes expressing quantitative evidence in support of an argument.

MTH 125S Supplemental Everyday College Math**2 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; Academic Math Level 2**Corequisites:** MTH 125**30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours**

In this course, students receive supplemental instruction in the concepts and techniques necessary for MTH 125. Topics include percents, interest, formulas, calculator skills, lines, quadratics, and basic exponentials. Students develop homework, study, and note-taking skills that are critical to success in the college level mathematics course.

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 students pursuing a career in elementary education. 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 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

In this course, students will use elementary statistics to achieve statistical literacy. Emphasis is on interpretation and evaluation of statistical results. Broad topics include descriptive statistics, linear regression, basic probability theory and inferential statistics. Specific topics include describing data sets graphically and numerically, measures of center and spread, bivariate data and least squares regression, correlation, random variables, basic probability distributions, confidence intervals and hypothesis tests. 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 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 students with 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.

MTH 176S Supplemental College Algebra**2 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; Academic Math Level 3**Corequisites:** MTH 176**30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours**

In this course, student receive supplemental instruction in the Algebraic concepts and techniques necessary for MATH 176. The topics covered include performing basic operations with rational and real numbers, simplifying expressions, solving linear equations, factoring polynomials, operating with rational and radical expressions and equations.

MTH 178 General Trigonometry**3 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; Academic Math Level 5 or 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 or MTH 176 minimum grade "C", may enroll concurrently**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 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 a first-semester single variable college calculus course. Students learn topics including limits, L'Hôpital's Rule, continuity, transcendental functions, derivatives, antiderivatives, applications of derivatives, including optimization, maximum and minimum problems, business, economics, sports, engineering, physics, Newton's method, and applications of integration. 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 the standard second semester single variable calculus course. Students explore topics including applications of integration, integration techniques, L'Hôpital's Rule, numerical integration, improper integrals, infinite series, Taylor 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; Academic Math Level 7 or MTH 191 minimum grade "C"
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

This is a first course in linear algebra. Topics include systems of linear equations, vector equations and matrix equations; matrix algebra, partitions and factorizations; determinants; matrix inverses and the Invertible Matrix Theorem; vector spaces and subspaces; linear independence, bases and dimension; null and column spaces, rank; linear transformations on vector spaces, kernel and range; injective, surjective and bijective mappings; isomorphism; eigenvalues and eigenspaces; diagonalization; inner product spaces, orthogonal matrices, Gram-Schmidt orthogonalization; least-squares approximation; and diagonalization of symmetric matrices.

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 course in the standard Calculus sequence. This course covers differential, integral and vector calculus for functions of more than one variable. 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 differential equations. Topics include solving first and higher order linear and non-linear differential equations, solving special differential equations including the Cauchy-Euler types of equations, the Bernoulli types of equations, both homogeneous and non-homogeneous equations, and exact equations. The course also covers Laplace Transforms, solving systems of linear differential equations using the eigenvalue method. The course also covers linearization, numerical methods, and phase plane analysis. In addition to the Calculus 3 prerequisite, 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.

Mechatronics**MEC****MEC 100 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

In this course, students receive 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, students 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 AMS 103.

MEC 101 Blueprint Reading for Manufacturing**2 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
30 lecture, 30 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students will develop the skills to read and understand blueprints used in manufacturing. Topics such as terms of the trade, program identification of line types, dimensioning systems, tolerancing, first and third angle projections and associated views and symbols used in manufacturing will be covered. Students will also be introduced to procedures and tooling used to compare machined components to blueprint specifications. The knowledge and skills gained in this course will be used throughout the Mechatronics program. The title of this course was previously 3D Modeling and Blueprint Reading.

MEC 120 3D-Printing: Machine, Process and Innovation**4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

In this course, students will look at three aspects to Fusion Deposit Modeling (FDM), one of the most popular forms of 3D printing. First covered is assembly and alignment of a 3D printing machine. Second, students explore programming and process parameters, using open source STL files. Finally, students will learn an entry level CAD software.

MEC 201 Mechanisms**2 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 3; MEC 101 minimum grade "C-"
0 lecture, 60 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students will use hands-on experiences to gain an understanding of the theory and principles of electro-mechanical design in industrial devices and products. Students will examine the fundamental forces and motion within mechanisms. This class is a foundation class for the mechatronics program.

MEC 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

In this course, students will learn about advanced programming of robots and programmable controllers in an integrated work cell. Problems related to maintenance and trouble-shooting constitute a major segment of the course. A group project involving the design and construction of a work cell that simulates some industrial process is an enjoyable conclusion to this course. This course contains materials previously taught in ROB 224.

Medical Assisting**MED****MED 101 Introduction to Medical Assisting****1 credit**

Level I Prerequisites: Academic Reading Level 5; Academic Writing Level 3; Admission to Medical Assisting program; MED 104, MED 112, MED 114 and MED 116 may enroll concurrently
15 lecture, 0 lab, 0 clinical, 0 other, 15 total contact hours

In this course, students will be introduced to the field of medical assisting and the healthcare team. Students will explore the role of the medical assistant, including professionalism, duties, responsibilities, and medical specialties. Students will also learn effective communication, medical law and ethics, and compliance and regulatory issues affecting the role of the medical assistant.

MED 104 Medical Assistant Math and Pharmacology**1 credit**

Level I Prerequisites: Academic Reading Level 5; Academic Writing Level 3; Admission to Medical Assisting program; MED 101, MED 112, MED 114 and MED 116 may enroll concurrently
15 lecture, 0 lab, 0 clinical, 0 other, 15 total contact hours

In this course, students will review basic math, learn how to safely calculate drug dosages, and administer medications by oral, injectable, and other routes. Students will also learn the classifications of drugs, the top medications in those categories, and relevant dietary requirements for specific patients.

MED 112 Medical Assistant Administrative I**2 credits****Level I Prerequisites:** Academic Reading Level 5; Academic Writing Level 3; Admission to Medical Assisting program; MED 101, MED 104, MED 114 and MED 116 may enroll concurrently**30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours**

In this course, students are introduced to the basic administrative procedures performed in an ambulatory setting. Students will also be introduced to the administrative use of the medical record. Also included are professional communications and behaviors, patient reception, office equipment, ethical and legal standards, and the office environment. Students must complete the course with a "C" or higher.

MED 114 Medical Assistant Lab I**3 credits****Level I Prerequisites:** Academic Reading Level 5; Academic Writing Level 3; Admission to Medical Assisting program; MED 101, MED 104, MED 112 and MED 116 may enroll concurrently**45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours**

In this course, students are introduced to medical office practices, patient intake, screening measures and vital signs, infection control measures, and assisting the provider during examinations. There will also be a review of medical terms as well as anatomy and physiology of body systems throughout this course. Students must complete the course with a "C" or higher.

MED 116 Insurance Billing and Coding Basics for the Medical Assistant**2 credits****Level I Prerequisites:** Academic Reading Level 5; Academic Writing Level 3; Admission to Medical Assisting program; MED 101, MED 104, MED 112 and MED 114 may enroll concurrently**30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours**

In this introductory course, students identify insurance coverage appropriately and accurately, complete insurance forms and become familiar with billing procedures. Students will be introduced to a variety of medical insurers including Medicare, Medicaid, Blue Cross/Blue Shield, Tricare, and CHAMPVA. Students will learn to navigate the current procedural terminology (CPT) and International Classification of Disease (ICD)-10 Code Books to accurately obtain the correct codes to be used to complete a clean 1500-claim form to bill appropriate insurance companies. The title of this course was previously Medical Insurance Billing and Coding Basics for MA.

MED 210 Medical Assistant Administrative II**2 credits****Level I Prerequisites:** Academic Reading Level 5; Academic Writing Level 3; MED 112 and MED 114, minimum grade "C"**30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours**

In this course, students learn more advanced administrative topics such as financial management of the practice, including billing and collections. They also review medical office administrative procedures such as written communications and medical record management.

MED 221 Medical Assistant Lab II**3 credits****Level I Prerequisites:** Academic Reading Level 5; Academic Writing Level 3; MED 112 and MED 114, minimum grade "C"**30 lecture, 75 lab, 0 clinical, 0 other, 105 total contact hours**

In this course, students will further develop their skills, abilities and behaviors in the role of Medical Assistant. Students learn to assess vital signs, prepare the patient for examination, assist the provider during examination, safely perform venipuncture and Clinical Laboratory Improvement Amendments (CLIA) waived tests, set up and assist with minor office surgeries, and clean and sterilize instruments. Students must complete the course with a "C" or higher.

MED 241 Medical Assistant Clinical Practice**2 credits****Level I Prerequisites:** Academic Reading Level 5; Academic Writing Level 3; MED 112 and MED 114, minimum grade "C"
0 lecture, 0 lab, 160 clinical, 0 other, 160 total contact hours

In this course, students explore the current work environment as a medical assistant by taking part in a supervised, unpaid clinical placement that is consistent with the standards of practice in the field. Students practice effective communication, ethical behaviors, cognitive and psychomotor skills, and affective competencies. Tasks, such as taking vital signs, preparing patient rooms or administering medication, may be required depending on the student's placement. Students must complete a total of 160 hours and pass the course with a "C" or higher.

MED 245 Medical Assisting Credentialing Exam Review**1 credit****Level I Prerequisites:** Academic Reading Level 5; Academic Writing Level 3; MED 112 and MED 114, minimum grade "C"
15 lecture, 0 lab, 0 clinical, 0 other, 15 total contact hours

This course provides a comprehensive review of medical assisting knowledge, concepts and skills to help prepare students for one of the open (non-CAAHEP or ABHES) national credentialing exams. Students learn test-taking techniques and take practice examinations with rationale reviews of practice content.

Medical Billing & Coding**MBC****MBC 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 will 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 efficiencies. Students will learn strategies for the conversion of paper documents from legacy medical office systems to EHRs. 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. Best practices in the handling of healthcare and patient data will be discussed. This course was previously BOS 185.

MBC 205 Introductory ICD Coding**3 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; BIO 109 or BIO 111 and HSC 124, minimum grade "C"
Corequisites: MBC 215
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students will be introduced to the process of transforming narrative descriptions of diseases and injuries into alphanumeric codes used to report and share patient healthcare issues with healthcare providers and insurers. An overview of ICD-10 disease coding will be provided, and students will be given hands-on training in encoder usage. This course was previously HIT 205.

MBC 210 Intermediate/Advanced ICD-10 CM Coding**3 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; MBC 205
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students are introduced to the process of transforming narrative descriptions of diseases and injuries into alphanumeric codes used to report and share patient healthcare information with healthcare providers and insurers. An overview of the ICD-10 CM disease coding system will be provided, and students will practice using the coding system. Students will apply ICD-10 CM to complex coding scenarios and examine strategies for implementing coding compliance, auditing, reporting and quality monitoring.

MBC 215 Introductory Procedural Coding**3 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; BIO 109 or BIO 111 and HSC 124, minimum grade "C"**Corequisites:** MBC 205**45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours**

In this course, students will be introduced to the principles and application of procedure coding systems such as ICD-10-CM Volume III and ICD-10-PCS, CPT 4 and HCPCS. Students will also learn about procedural groupings such as APC and RUGs. This course was previously HIT 215.

MBC 220 Intermediate/Advanced Procedural Coding**3 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; MBC 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. This course was previously HIT 220.

MBC 223 Medical Office Procedures**3 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; BIO 109 or BIO 111 and HSC 124; minimum grade "C"**45 lecture, 15 lab, 0 clinical, 0 other, 60 total contact hours**

In this course, students are introduced to the professional characteristics of 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.

MBC 224 Medical Insurance and Reimbursement**4 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; HSC 124 and BIO 109 or BIO 111; minimum grade "C" all HSC and BIO requirements**60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours**

This introductory course is for students interested in a career in a medical office as a medical assistant, a receptionist or an 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.

MBC 250 Medical Coding Practicum**3 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; MBC 185, MBC 210, MBC 220, MBC 223, MBC 224**0 lecture, 30 lab, 120 clinical, 0 other, 150 total contact hours**

In this course, 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 billing and/or coding functions. The students' work will be supervised by WCC instructor(s) as well as healthcare office/facility staff. This course was previously HIT 250.

Motorcycle Service Technology**MST****MST 106 Introduction to Powder Coating****3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; ABR 111 or ASV 130 or MST 110, minimum grade "C"
30 lecture, 30 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students are introduced to the basic principles and process of powder coating, a finishing process for vehicle components that is an alternative to painting. Students will be introduced to tooling, media and procedures used to powder coat small components. Other topics such as project management and resource development will be covered.

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

In this course, students are introduced to the operation of a motorcycle service department. Students will be instructed in the proper use of hand and shop tools. The theory, operation, tolerances, and specifications of basic internal combustion engines will be covered. Included in this class are the proper procedures for precision measurements, using a service and parts manual, and performing mileage-based maintenance. Emphasis is placed on time and quality proficiency.

MST 112 Advanced Powder Coating**3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; MST 106 minimum grade "C"
30 lecture, 30 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students are exposed to more complex techniques used in the powder coating process. Advanced powder coating is a multiple layered coating process that is an alternative to custom painting. Students will further develop skills in tooling, media and procedures used to powder coat by applying them to larger components. Color matching, powder coating step-by-step process identification and proper media selection for specific applications will be discussed.

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

In this course, students will learn to identify and explain the operational theory of motorcycle drivelines. They will learn 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

In this course, students focus on problem-solving strategies for isolating defective components, troubleshooting and repair. Students will work on wiring harness, charging system, ignition system and starting system components. 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, MTT 102 and WAF 105, minimum grade "C"
45 lecture, 60 lab, 0 clinical, 0 other, 105 total contact hours

In this course, students learn the proper procedure for preparing complete and accurate damage repair estimates through the use of manufacturer's service and parts manuals. 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 and MST 225, minimum grade "C"
45 lecture, 60 lab, 0 clinical, 0 other, 105 total contact hours

In this class, students will explore performance powertrain theory and the skills to develop and build reliable engines. Topics such as selection of complementary engine components, precision measuring tools, performance engine testing simulators and engine component machining tools will be covered. Students will also learn the advantages and disadvantages of raising the performance levels of an engine. Upon successful completion of the course, students will be able to identify, design, install and test engine enhancing components.

MST 220 Dynamometer Operations**4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; ASV 277 or MST 140, minimum grade "C"
45 lecture, 60 lab, 0 clinical, 0 other, 105 total contact hours

In this course, 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 104 Performance Workshop Ensemble****2 credits****Level I Prerequisites:** No Basic Skills
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

In this course, students explore the fundamentals of professional stage persona and etiquette through live events and concerts performed at WCC and throughout the community. The genres of music performed will range anywhere from rock, hip-hop, R & B, pop, and jazz. The instrumentation will focus on lead and rhythm guitar, electric bass guitar, piano, synthesizer, drums, woodwind, brass, strings, and vocals. Collaboration with stage and lighting technicians will round out the experience, allowing students to gain professional training in creating the ultimate concert experience. The title of this course was previously Top 40 Combo.

MUS 105 Jazz Combo and Improvisation I**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 in American Blues and Jazz. 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. The title of this course was previously Basic Combo and Improvisation.

MUS 106 Jazz Combo and Improvisation II**2 credits****Level I Prerequisites:** No Basic Skills; MUS 105 or equivalent performance experience with an instrument or voice
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 continuing experience and skill in performance and improvisation of different styles of blues and jazz music. This is a performance group which offers concerts at WCC and in the community-at-large. Students must play and have moderate mastery of an instrument or voice. The title of this course was previously Jazz Combo and Improvisation.

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 114 Fundamentals of Performance**1 credit****Level I Prerequisites:** No Basic Skills
15 lecture, 30 lab, 0 clinical, 0 other, 45 total contact hours

This is a flexible performance ensemble class that encourages vocalists, instrumentalists, and other performance artists to create, rehearse and perform pieces of artistic or collaborative art. In addition to practicing fundamental techniques that expand the student's performance experience and vocabulary, students will create performance pieces to perform in the college and community. Students are encouraged to have fundamental fluency on an instrument (voice or performance area).

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, 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 (hobbyist to professional) a basic foundation in reading and writing musical notation. Students will learn musical form, rhythm, meter, pitch notation, analysis of compositional elements, and the creative use of music. Students will also explore the basic concepts of self-motivated learning as it applies to music theory or a career in music.

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

In this course, students will continue the development of their skills in reading and writing musical notation. Students will advance their skills in hearing and reading musical form, rhythm, meter and pitch notation. Students will analyze compositional elements as they relate to the creative composition of music.

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 Arts, Media and Entertainment 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 study basic agreements, contracts, royalties, copyrights and other legal aspects in the Music, Arts and Media industries. Students who intend to perform, publish, record or produce artistic media artifacts need this important information. The title of this course was previously Entertainment Law.

MUS 154 Functional Piano I**2 credits****Level I Prerequisites:** Academic Reading Level 3; 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, basics in reading music, pedal technique and keyboard facility for use in and 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 3; 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 I, 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 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 in which students 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 204 Voice I**3 credits****Level I Prerequisites:** No Basic Skills
0 lecture, 0 lab, 0 clinical, 45 other, 45 total contact hours

In this course, students are introduced to fundamentals of vocal technique, basic anatomy and physiology of the voice and exposed to various vocal styles and genres. Students will study and perform a beginning repertoire in class and receive instruction in a group setting.

MUS 205 Voice II**3 credits****Level I Prerequisites:** No Basic Skills; MUS 204 minimum grade "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students continue to develop and expand vocal techniques by studying a diverse and challenging repertoire of song. Students will apply technique using the basics of the anatomy and physiology of the voice to enhance vocal skills. Student will study and perform an extended repertoire in class and receive instruction in a group setting.

MUS 209 Musical Theatre Song Performance**2 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; MUS 204 minimum grade "C-"
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

In this course, students are introduced to a beginning repertoire of Musical Theatre song. Students develop vocal techniques specific to Musical Theatre and apply them using the basics of the anatomy and physiology of the voice. Students will study and perform Musical Theatre songs in class and receive instruction in a group setting. The title of this course was previously Musical Theatre Song Performance Seminar.

MUS 214 Advanced Performance Art Ensemble**2 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; Any 100 level music (MUS) course except for MUS 147 or MUS 162.
30 lecture, 15 lab, 0 clinical, 0 other, 45 total contact hours

This is an advanced performance community for students with intermediate to advanced proficiency in instrumental, vocal, dance, visual, media, or story-based performance art. Students should be prepared to create, practice and perform original and adapted creative art with the proficiency and technique required of professional performers. This course may be completed for credit up to a maximum of three times.

MUS 239 Blues & Jazz for Guitar & Bass I**3 credits****Level I Prerequisites:** No Basic Skills**45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours**

This class will focus on essential techniques and improvisational skills in Blues and Jazz guitar and bass guitar as relates to all styles of music. The class will give insight into improvisation, playing of chord progressions, comping, and playing of bass lines. Students will also learn essential elements in rhythm section dynamics and performance. The title of this course was previously Jazz Guitar I.

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 explore various aspects of automated machining centers used in automated manufacturing. Studies include an introduction to controllers, fundamentals of set-up and operation, programming computer numerical control (CNC) controllers, computer-aided design/computer-aided manufacturing (CAD/CAM) software, and simulation software.

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", may enroll concurrently**30 lecture, 30 lab, 0 clinical, 0 other, 60 total contact hours**

In this course, students focus on the set-up and operation of Computer Numerical Control (CNC) mills and lathes in the laboratory. Parts will be machined to specification, through variations of set-up and interactions with the machine tool controllers. Students will be able to operate the CNC mills and lathes in the lab after successful completion of this class. This class prepares students for the manual programming and advanced programming classes.

NCT 120 Introduction to 2D CAD CAM Programming and Applications**2 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6**30 lecture, 30 lab, 0 clinical, 0 other, 60 total contact hours**

In this course, students will learn CAD/CAM software to design parts for the various CNC manufacturing equipment. Points, lines, circles, view control, layers colors, break and trim functions will be used to create the geometry. Students will create both 2D and 3D geometry. The part geometry will be used to generate output files for various manufacturing equipment. Fundamental G and M codes will be reviewed to address machine specific requirements. This course contains material previously taught in NCT 249.

NCT 121 Manual Programming and NC Tool Operation**4 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; Academic Math Level 4; MTT 102, 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 123 2D CAD CAM CNC Programming for Mills and Lathes**2 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; NCT 120 minimum grade "C"**30 lecture, 30 lab, 0 clinical, 0 other, 60 total contact hours**

In this course, students will use geometry creation skills to create tool paths for drilling operations, arc hole patterns, hole patterns, slotting, facing, contouring, and pocket milling. The CAM files will be posted to the vertical CNC machine tools to create milled parts. Lathe cycles such as facing, internal and external roughing, grooving, and threading will be used with the CAM software to produce parts on the CNC horizontal lathes. This course contains material previously taught in NCT 249.

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; Academic Math Level 4; 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 macros, 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 255 Probes, Macros and Conversational Programming for CNC**4 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; NCT 121 and NCT 221, minimum grade "C"**Level II Prerequisites:** Industry CNC machining experience may fulfill the NCT 121 and NCT 221 prerequisite**45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours**

In this course, students will learn the fundamentals of intuitive probing system (IPS) and visual quick code (VQC) for creation of probing cycles for CNC machine tools. The offset tool setter (OTS), the optical measurement probe (OMP) outputs and user defined inspection routines will be integrated into part programs. Students will setup and calibrate the OTS for various operational settings as well as understand the method for calibrating the OMP.

NCT 259 MasterCam 2D and 3D CAM CNC Programming for Mills**4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; NCT 221 minimum grade "C"
45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

In this course, students develop skills required to operate MasterCam software used to create 2D and 3D tool paths for milling operations. Basic understanding of file and menu structures for CAD and/or CAD CAM systems will be required for this class. Many of the menu selections, icons and tool pallet choices will be similar to those studied in the manual programming classes.

NCT 269 4 and 5 Axis Machining for the CNC Vertical Mills**4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; NCT 221 and NCT 259, minimum grade "C"
45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

In this course, students will develop skills required to setup 4 and 5 axis operations on CNC Mills. Students in this class will write manual code to position the 4th and 5th axis as well as use MasterCam software to generate 4 and 5 axis part geometry and tool paths for machining. Students will set-up and machine parts using the 4th and 5th axis programs.

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 108 Nursing Concepts I****8 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to Registered Nursing (APNURS) or Nursing Transfer (APNURE) program; BIO 147 or BIO 237 and BIO 212, minimum grade "C"; and NUR 115 minimum grade "C+"; may enroll concurrently in BIO 147 or BIO 237, BIO 212 and NUR 115
75 lecture, 90 lab, 45 clinical, 0 other, 210 total contact hours

In this course, students will apply foundational nursing concepts across the lifespan with an emphasis on late adulthood. The organizing framework for the nursing practice will be introduced including patient-centered care, teamwork and collaboration, safety and quality improvement, informatics and technology, evidence-based practice, and professionalism. Basic psychomotor and psychosocial concepts and skills will be practiced through clinical, lab and simulation.

NUR 115 Pharmacology**3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; Academic Math Level 4; BIO 111 minimum grade "B-"; BIO 212 minimum grade "C", may enroll concurrently; BIO 147 or BIO 237, minimum grade "C", may enroll concurrently in either course; MTH 160 minimum grade "C" or MTH 176 minimum grade "C" or a math course numbered higher than 176 with a minimum grade of "C"
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students learn basic principles of pharmacology with a strong emphasis on medication safety along with drug dosage calculations. Pharmacodynamics, pharmacokinetics, and pharmacotherapeutics of major drug classifications are discussed using a pathophysiological approach and then applied to patient situations. Drug contraindications, drug interactions, adverse effects, nursing management, and patient education are also discussed and then applied to patient situations. Anatomy and physiology is a course prerequisite. This is a required course in the WCC Nursing Programs but may also be taken for transfer by any pre-nursing or nursing student.

NUR 116 Perioperative Nursing**2 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; NUR 128 or NUR 134, minimum grade "C+"
15 lecture, 0 lab, 45 clinical, 0 other, 60 total contact hours

Through lab and clinical settings, students will develop a well-defined foundation of perioperative nursing concepts and basic skills for aseptic technique, patient safety and teamwork that can be translated into clinical experiences. The course is designed as an elective in general nursing programs to help educate student nurses on perioperative nursing concepts.

NUR 128 Nursing Concepts II**8 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; BIO 147 or BIO 237 and BIO 212, minimum grade "C"; NUR 108 and NUR 115, minimum grade "C+"; and PSY 206 minimum grade "C"; PSY 206 may enroll concurrently

75 lecture, 35 lab, 100 clinical, 0 other, 210 total contact hours

In this course, students will apply the nursing process to provide safe, quality nursing care for patients with common acute and chronic health problems across the lifespan, including care of the family during the uncomplicated childbearing experience. This course also includes clinical, lab and simulation in a variety of settings where students will apply informatics and technology for effective communication.

NUR 134 Nursing: LPN to RN Transition Course**3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to Nursing, Licensed Practical Nurse to Registered (APNURL) program

30 lecture, 45 lab, 0 clinical, 0 other, 75 total contact hours

This course facilitates the licensed practical nurse's (LPN) transition into a new role as an associate degree nursing (ADN) student, with the ultimate goal of becoming a registered nurse (RN). Emphasis is placed on roles/responsibilities of the RN, the nursing process and critical thinking/clinical judgment and focuses on adult clients experiencing selected health alterations. The course orients the student to the philosophy, major concepts, and program outcomes of the ADN program.

NUR 138 Nursing Concepts III**8 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; NUR 128 or NUR 134, minimum grade "C+"; PSY 206 minimum grade "C"; and PHL 244 minimum grade "C"; PHL 244 may enroll concurrently

75 lecture, 45 lab, 90 clinical, 0 other, 210 total contact hours

In this course, students will use clinical judgment based on evidence and informatics to prioritize safe, quality care for patients with complex physical and mental health problems across the lifespan. Students will begin using delegation and leadership skills in managing their patient care assignments through clinical and simulation experiences in a variety of settings. Students will demonstrate professional conduct within current legal and ethical standards of practice.

NUR 288 Nursing Concepts IV**8 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; NUR 138 minimum grade "C+"; PHL 244 minimum grade "C"
75 lecture, 51 lab, 84 clinical, 0 other, 210 total contact hours

Students will demonstrate clinical judgment in collaboration with the interprofessional team to prioritize safe, quality care for patients with multisystem and emergent health problems. Students will expand their knowledge and usage of psychomotor, affective and cognitive skills in managing their patient assignments through clinical and simulation experiences across the lifespan in a variety of settings. Students will synthesize knowledge of nursing principles and concepts and begin to refine their professional nursing roles. Emphasis is placed on clinical reasoning and clinical judgment in the integration of care management for multiple complex patients. Students prepare for the National Council Licensure Examination-Registered Nurse (NCLEX-RN).

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 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? In this course, students consider the works of central existentialist figures such as Kierkegaard, Nietzsche, Sartre and Camus as well as related literary works. Students explore themes such 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 course, students will be introduced to the main tenets and justifications of at least four classical ethical theories within the Western tradition, such as Ethical Relativism, Virtue Ethics, Natural Law Ethics, Deontological (Duty) Ethics, Utilitarianism, Social Contract Theory, and Care Ethics. Additionally, students will be introduced to how each ethical theory covered in the course answers some concrete moral questions differently.

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

In this course, students are introduced 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 patients' 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 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

In this course, students are introduced 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 regard to the latter, the course will again explore methods of evaluation, highlighting common mistakes in informal or everyday reasoning.

Photography**PHO****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 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 course is a comprehensive study of foundational photographic skills including digital single lens reflex (SLR) camera operation, composition, image organization, processing, and presentation skills. Cameras are available for check out through the WCC Photography Program to complete course assignments. Adobe Lightroom software is used for all image organization, processing and printing.

PHO 116 Studio Portraits**4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; PHO 117 minimum grade "C-"
30 lecture, 0 lab, 0 clinical, 60 other, 90 total contact hours

This course provides tools and techniques commonly encountered in professional retail, commercial, and editorial portrait studios. Students implement an expanded range of lighting strategies and techniques producing photographs of people. Business and ethical issues regarding the production and publication of portraits are studied. Enhancement, retouching, and interpretation of portraiture with image composite software [Photoshop] are required in assignments and thematic project.

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 is a comprehensive overview of the photography studio workflow, including 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 Film and Darkroom Photography**3 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6
30 lecture, 0 lab, 0 clinical, 30 other, 60 total contact hours

In this course, students explore the craft of creating high-quality B&W negatives and darkroom prints. Students will learn to use manual 35 mm and medium format film cameras, process B&W film, and print using traditional darkroom methods and materials. Prior photography experience is not required. Cameras are available for student check out to complete the course. The title of this course was previously Darkroom Techniques.

PHO 127 Digital Photo Imaging I**4 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; PHO 111 minimum grade "C-", may enroll concurrently
45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

In this course, students will be introduced to digital photographic imaging using Photoshop. Through a variety of hands-on assignments, students explore ways of working with photographs on the computer. Emphasis is placed on establishing solid foundation skills in digital photographic imaging such as resolution control, effective digital workflows, and print and web output options. PHO 111 must be taken as a prerequisite or concurrently.

PHO 129 Black and White Digital Imaging**4 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6
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, Nik and Photoshop software applications, 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 using color in photography. Topics include optical color, color theory, color relationships, emphasis with color, psychological effects of color and color control with Adobe Lightroom, Photoshop and Nik 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 111 and PHO 122, minimum grade "C"
30 lecture, 0 lab, 0 clinical, 45 other, 75 total contact hours

In this course, students will study 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 122 may contact the instructor for permission to waive the prerequisite.

PHO 211 Large Format Photography I**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

In this course, students are introduced to the operation and use of 4x5 large format cameras. Students learn to load and process sheet film, print large format negatives in the darkroom, and scan and digitize negatives for inkjet output. Students also learn the use of perspective and depth of field controls of the camera through view camera movements. Topics include architectural, portrait, macro and landscape photography. Students will be loaned the use of a large format camera for the semester.

PHO 212 Large Format Photography II**3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; PHO 111 minimum grade "C-" and PHO 211 minimum grade "D"
30 lecture, 30 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students continue 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, large print creation and 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 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; PHO 127 minimum grade "C"
45 lecture, 0 lab, 0 clinical, 45 other, 90 total contact hours

This course provides an advanced level of investigation into digital photographic tools and techniques. Emphasis is placed throughout the course on color management and workflow skills. Students will 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 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

In this course, students learn about human movement, including the principles of basic physics and biomechanics. Students examine the relationship of structures (skeletal, joint, neural, muscle) to function and examine 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

In this course, students are introduced to the study of disease and disease processes in humans. Emphasis is placed on the impact of disease 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 when working 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, 60 lab, 0 clinical, 0 other, 75 total contact hours

In this course, students apply and build on the knowledge of human anatomy and clinical kinesiology and learn 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

In this course, physical therapist assistant students are introduced 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 as well as 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

In this course, students are introduced to the theory, principles and procedures of therapeutic exercise. Students apply this foundation to the safe and appropriate selection, administration, monitoring and adjustment of exercise programs such as balance, strengthening and posture. Students develop skills in data collection and reporting techniques such as goniometric range of motion and manual muscle strength testing. The rationale for the selection and use of basic exercise equipment will be developed. Students will practice the development, selection and progression of goal-directed therapeutic exercise programs as well as monitoring and documenting patient performance and response through laboratory activities including 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"**Corequisites:** PTA 250**15 lecture, 0 lab, 0 clinical, 0 other, 15 total contact hours**

In this capstone course, students build on classroom and clinical education experiences to examine ethical considerations associated with patient care, departmental organization and its effects on the role of the physical therapist assistant. Students continue preparation for employment, develop a plan for professional growth and present a critical review of published research. Students must pass the comprehensive final exam in order to complete the program and be eligible for the licensure exam.

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 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 thermodynamics. Laboratory exercises are included to assist students in understanding and applying 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

This course is the second part of a two-course sequence in algebra-trigonometry based physics for pre-professional and liberal arts students. It covers the concepts of electricity, magnetism, light and modern physics extending the students' knowledge of physics learned in the prerequisite course. 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, translational and angular momentum, 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 course is the second part of a two-course sequence in calculus-based physics for students majoring in science and engineering. Students will cover the concepts of electricity, magnetism, light and modern physics. Laboratory exercises are included to assist students in understanding these topics and to develop skills in data analysis methods.

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 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

In this course, students critically examine 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 241 Guns, God and Ganja: U.S. Federalism**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 federalism course, students examine the relationship among the U.S. Constitution, state and federal lawmaking, and citizen initiatives. Topics will include the ownership and regulation of guns, the impact of religion relative to abortion and LGBT rights, and state and federal law regarding marijuana and the legalization of drugs. The 2nd and 14th Amendments, and Articles 3, 4, 5, and 6 of the U.S. Constitution will be explored.

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.

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

In this course, students are introduced to the scientific study of psychology - the study of mental processes and behavior. This survey course includes such topics as psychological development, learning, thinking, motivation, emotion, perception, intelligence, aptitudes and personality. Basic principles and their practical applications are discussed.

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

In this course, students will read case studies that describe transformative events in corporate culture including ethical and moral dilemmas. They will learn the tools to facilitate entering an employment organization and comprehending their role in it. Students will learn about the interdependency of the organization, the individual and the connectivity between the individual and the individual's workplace organization. The foundation of this course is based in organizational development, industrial organizational 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

In this course, students receive an overview of the psychology of human development and 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 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

In this course, students are provided with 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

In this course, students are introduced to basic behavioral principles and their applications to individuals in need of behavior intervention (i.e., mentally ill, developmentally delayed, problems with daily living, and general behavioral struggles). Students will learn to recognize and interpret behavior patterns, recall the impact of different intervention strategies and determine an effective behavioral modification plan. Students will be asked to design, implement and evaluate the impact of a personal behavioral modification plan.

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
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students are introduced to the historical, philosophical and organizational factors leading to the enactment of federal and state laws, rules and regulations governing persons with exceptionalities. Students are presented with 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 of this course.

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

In this course, students will be introduced to abnormalities in personality types, their origin, symptoms, developments, prevention and treatment. Main topics include: simple maladjustment, disturbances of emotion, perception, memory, judgment or thought. Other topics may include early symptoms of schizophrenia and disorders of mobility and speech.

PSY 296 Neuropsychology of Addiction**3 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6**Level II Prerequisites:** PSY 100 and BIO 101 or BIO 102 are strongly recommended**45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours**

In this course, students will study the basic principles of pharmacology, including both pharmacokinetics and pharmacodynamics and the application of these principles to addictive drugs. In particular, students will focus on the functioning of the nervous system with an emphasis on neurotransmission, the evolution of our understanding of the biological mechanisms of addiction, and various physiological effects, including the mechanism of action of both legal and illegal psychoactive drugs.

PSY 297 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.

PSY 298 Treatment 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 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.

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 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 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

In this course, students will participate in 240 hours of structured clinical experience under the direct and indirect supervision of a registered radiographer. Students apply knowledge and skill in positioning the upper extremity, chest and abdomen for radiographic procedures. This course has a major focus on patient care and communication, requiring students to demonstrate professional ethics, empathy and professional behavior. Students will receive training in equipment operation, image processing, and radiation safety.

RAD 111 Fundamentals of Radiography**2 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; Admission to Radiography program
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 when they 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 using phantoms.

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 101 and 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**

In this course, students explore 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 110 and RAD 120, minimum grade "C-"; RAD 120 may enroll concurrently**15 lecture, 30 lab, 0 clinical, 0 other, 45 total contact hours**

In this course, students learn 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**

In this course, students will learn 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 150 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 to identify anatomic structures of the human body from computed tomography and MRI sectional images presented in axial, coronal, and sagittal planes and analyze the special relationship of these structures. 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 232 Digital Imaging in Radiography**2 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; RAD 190 minimum grade "C-"
15 lecture, 30 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students are introduced to the physical principles of digital radiography imaging systems. Topics include digital image acquisition processing, the effective use of exposure factors for digital image receptors (computed radiography and flat-panel digital radiography), imaging physics of digital fluoroscopy and mammography, and quality control for digital radiographic equipment. The principles of image display, archiving, and retrieval commonly used for Picture Archiving Communication Systems (PACS) will also be presented.

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 study of pathological imaging to include respiratory, gastrointestinal and accessory organs, genitourinary, skeletal, cardiovascular, and nervous systems. This course will investigate the etiology, signs, symptoms, and primary methods of diagnosis. An emphasis is placed on radiologic visualization of pathological conditions. 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 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 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, 360 clinical, 0 other, 360 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 requires a 15 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 to sit 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 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, specialized mammographic procedures 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 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 the Mammography Quality Standards Act (MQSA), mammography equipment, quality assurance/quality control of digital mammography imaging systems, advanced breast imaging modalities, and breast cancer treatment options.

RAD 273 Mammography Clinical Education**3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to Mammography program; RAD 270 minimum grade "C", may enroll concurrently
Corequisites: RAD 271
0 lecture, 0 lab, 360 clinical, 0 other, 360 total contact hours

In this course, the certified radiologic technologist receives 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 image critique. Students will be assigned to a health care facility for 15 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.

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 robotics. 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, 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; Academic Math Level 3
Corequisites: ROB 223
15 lecture, 30 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students are introduced to Robotic Simulation using the ABB RobotStudio software. They will learn how to build computer simulated models of robotic workcells. Programming and running these simulations is 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 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**

In this course, students will learn the importance of the natural and physical 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 risk assessment and risk management 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.

SCI 103 Process and Professionalism in Science**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 explore methods used and challenges faced by modern scientists in real-world research settings. The laboratory portion of the course is tailored to one of three STEM emphasis areas: natural/physical sciences, engineering, and computer/information sciences. Laboratory exercises will review and expand upon essential practical skills required for success in professional research environments.

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

In this course, students examine the foundation of sociology as the basis of group behavior in a society, which includes topics such as social interaction, social control, social inequality, as well as social change. Emphasis is placed on the impact of social institutions on the self.

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

In this course students examine the nature, location, and impact of crime by exploring a broad range of issues related to criminology. Topics include the historical foundations of crime, the theoretical underpinnings of criminality, how we measure criminal acts, and a critical analysis of public policies concerning crime control in society. Students will focus on newly recognized forms of crime that exist within contemporary society in addition to criminal's relationships to the courts, police and other penal agencies.

SOC 205 Race and Ethnic 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

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 domestically and globally. Sociological approaches are used to critically analyze the complex nature of social, economic and power inequalities stemming from the intersection of social class, religion and gender within and among racial-ethnic 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 home-based 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 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 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. Students who have two or more years of Spanish study are encouraged to take the Spanish Placement Test (available free of charge in the College Testing Center - SC 300).

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 course builds upon elementary-level vocabulary, expressions, and grammatical structures. Students will practice the fundamentals of listening, speaking, reading, and writing as they develop Spanish comprehension and communication skills. Classes are interactive in nature and student participation is strongly encouraged. Cultural aspects of the Spanish-speaking world are also discussed.

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**

In this course students continue to develop intermediate-level Spanish language and communication skills. Particular emphasis is placed on the interpretation and discussion of Spanish short stories, as well as the development of written expression and speaking proficiency. Intermediate-level grammatical structures, vocabulary, and expressions are introduced and practiced. Cultural lessons are also included to provide context for selected stories. This interactive course is taught in Spanish and active student participation is required.

Surgical Technology**SUR****SUR 101 Introduction to Sterile Processing****6 credits****Level I Prerequisites:** Academic Reading Level 5; Academic Writing Level 3; Successful completion of background check**Corequisites:** SUR 102**45 lecture, 90 lab, 0 clinical, 0 other, 135 total contact hours**

In this course, students are introduced to the profession of sterile processing including patient confidentiality, Health Insurance Portability and Accountability Act (HIPAA) and working as part of a professional team. The principles of decontamination, sterilization, packaging and storage of instrumentation and surgical supplies will be discussed. Identification, assembly, care and proper handling of instrumentation will be presented with a focus on various surgical specialties and the instrumentation associated with each.

SUR 101A Introduction to Sterile Processing Lecture**3 credits****Level I Prerequisites:** Academic Reading Level 5; Academic Writing Level 3; Successful completion of background check**Corequisites:** SUR 102A**45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours**

In this theory course, students are introduced to the profession of sterile processing including patient confidentiality, Health Insurance Portability and Accountability Act (HIPAA) and working as part of a professional team. The principles of decontamination, sterilization, packaging and storage of instrumentation and surgical supplies will be discussed. Identification of instrumentation will be discussed with a focus on various surgical specialties and the instrumentation associated with each.

SUR 101B Introduction to Sterile Processing Lab**3 credits****Level I Prerequisites:** Academic Reading Level 5; Academic Writing Level 3; Successful completion of background check**Corequisites:** SUR 102B**0 lecture, 90 lab, 0 clinical, 0 other, 90 total contact hours**

In this lab course, students practice sterile processing including patient confidentiality, Health Insurance Portability and Accountability Act (HIPAA) and working as part of a professional team. They will perform decontamination, sterilization, packaging and storage of instrumentation and surgical supplies. Uses of instrumentation will be discussed with a focus on various surgical specialties and the instrumentation associated with each.

SUR 102 Introduction to Sterile Processing Equipment**2 credits****Level I Prerequisites:** Academic Reading Level 5; Academic Writing Level 3; High school diploma or GED and 18 years old by second semester of Sterile Processing program**Corequisites:** SUR 101**15 lecture, 30 lab, 0 clinical, 0 other, 45 total contact hours**

In this course students are introduced to equipment used daily in the Sterile Processing department. Students will learn the history, purpose and functionality of sterile processing equipment, as well as safe work practices to use with the equipment.

SUR 102A Introduction to Sterile Processing Equipment Lecture**1 credit****Level I Prerequisites:** Academic Reading Level 5; Academic Writing Level 3; High school diploma or GED and 18 years old by second semester of Sterile Processing program**Corequisites:** SUR 101A**15 lecture, 0 lab, 0 clinical, 0 other, 15 total contact hours**

In this course students are introduced to equipment used daily in the Sterile Processing department. Students will learn the history, purpose and functionality of sterile processing equipment.

SUR 102B Introduction to Sterile Processing Equipment Lab**1 credit****Level I Prerequisites:** Academic Reading Level 5; Academic Writing Level 3; Successful completion of background check; High school diploma or GED and 18 years old by second semester of Sterile Processing program**Corequisites:** SUR 101B**0 lecture, 30 lab, 0 clinical, 0 other, 30 total contact hours**

In this lab course, students work with equipment used daily in the Sterile Processing department. Students will learn the history, purpose and functionality of sterile processing equipment, as well as safe work practices to use with the equipment.

SUR 108 Sterile Processing Clinical**2 credits****Level I Prerequisites:** Academic Reading Level 5; Academic Writing Level 3; successful completion of health requirements; 18 years of age; SUR 101 minimum grade "C+"**Corequisites:** SUR 109**0 lecture, 0 lab, 224 clinical, 0 other, 224 total contact hours**

In a clinical setting, students will work under the supervision of the team leaders and department managers. Students will demonstrate professional behaviors and effective communication skills. Students will actively participate in the process of decontamination, sterilization, and distribution of sterile instrumentation and supplies. Students will be exposed to bloodborne pathogens during their clinical experience.

SUR 109 Sterile Processing Seminar**1 credit****Level I Prerequisites:** Academic Reading Level 5; Academic Writing Level 3; SUR 101 minimum grade "C+"**15 lecture, 0 lab, 0 clinical, 0 other, 15 total contact hours**

In this capstone course, students will review material and learn test-taking skills in preparations for the IAHCSSM certification exam. The creation of résumés and development of interview and job search strategies will also be examined.

SUR 110 Introduction to Surgical Technology/Surgical Patient**5 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to Surgical Technology program
45 lecture, 60 lab, 0 clinical, 0 other, 105 total contact hours

In this course, students will examine legal concepts and ethical issues relating to surgical patients as well as the physical environment of the Operating Room (OR), safety standards, hazards, and disease transmission. Surgical conscience and its application, along with components of effective surgical teamwork are discussed. In the lab environment, students will learn, practice and be evaluated on essential skills required during surgical case management. Students will identify related professional organizations and examine the various roles and job description of a surgical technologist.

SUR 170 Surgical Pharmacology**2 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; Admission to Surgical Technology program
30 lecture, 0 lab, 0 clinical, 0 other, 30 total contact hours

In this course, students will define anesthesia, and be introduced to the duties and roles performed by the OR team during drug administration. Students will learn to identify the actions, uses, side effects, contraindications and administration of drugs and anesthetic agents in the care of the surgical patients. Safe practices and sterile techniques used in anesthesia procedures will be emphasized. Students will become familiar with anesthesia equipment, supplies, terminology and medications used in surgery.

SUR 180 Surgical Procedures I**3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; SUR 110 minimum grade "C+", may enroll concurrently
Corequisites: SUR 181
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. This course provides a study of anatomy and physiology, pathophysiology, pharmacology and microbiology as it relates to surgical intervention.

SUR 181 Surgical Procedures I Lab**2 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; SUR 110 minimum grade "C+", may enroll concurrently
Corequisites: SUR 180
0 lecture, 60 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students learn the principles of introductory surgical procedures. Students apply these principles in a lab environment to practice and perform essential skills required in the surgical setting. This course instructs students to apply the principles of introductory surgical procedures in a lab environment. Students are introduced to specific instruments, equipment and supplies in general gynecological (obstetrics) and genitourinary surgery. Students will practice and be evaluated on their surgical case management skills.

SUR 210 Surgical Procedures II**3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; SUR 110, SUR 170, SUR 180 and SUR 181, minimum grade "C+"
Corequisites: SUR 211
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, orthopedic, plastic, cardiothoracic, peripheral vascular and neurosurgery. This course provides a relevant study of anatomy and physiology, the introduction to disease, tumors, fluid and hemodynamic disorders, inflammation and infection, surgically treatable diseases and disorders, and pharmacology as it relates to surgical intervention.

SUR 211 Surgical Procedures II Lab**2 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; SUR 110, SUR 170, SUR 180 and SUR 181, minimum grade "C+"
Corequisites: SUR 210
0 lecture, 60 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students will apply the principles of surgical procedures in the lab environment. Students are introduced to specific instruments, equipment and supplies relating to otorhinolaryngology, orthopedic, moral and maxillofacial, plastic, ophthalmic, cardiothoracic, peripheral vascular and neurosurgery. The title of this course was previously Surgical Procedures II Clinical.

SUR 231 Clinical Education I**1 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; SUR 110, SUR 211 and SUR 270, minimum grade "C+"; SUR 211 and SUR 270, may enroll concurrently
0 lecture, 15 lab, 120 clinical, 0 other, 135 total contact hours

In the clinical environment, students will learn, practice and perform essential skills required in Preop, PACU, CSPD and the OR. While under the supervision of the OR staff, students will demonstrate and practice methods of disinfection and sterilization, assist in sterile storage and distribution, observe cases and begin to scrub and assist team members when directed. Students will also meet in seminars during the semester. The title of this course was previously Surgical Procedures III Clinical.

SUR 241 Clinical Education II**4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; SUR 231 minimum grade "C+"
Corequisites: SUR 250
0 lecture, 15 lab, 480 clinical, 0 other, 495 total contact hours

In this course, students further develop the clinical skills needed in the perioperative setting. In this final clinical rotation, the student will exhibit a more independent role, while under the continued supervision of the surgical team. Students actively participate in all phases of the perioperative process.

SUR 250 Surgical Technology Seminar**3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; SUR 210, SUR 211 and SUR 270, minimum grade "C+"
Corequisites: SUR 241
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this capstone course, students will prepare to care and advocate for the surgical patient. This course entails a combination of research, theory and reflective learning (lab and clinical experience). Emphasis is placed on class participation which consists of lectures, individual and group projects, problem solving exercises and group discussions. In this course, students will develop their personal resume, as well as work on interview skills and present their resume in a "mock" panel interview during the course. Preparation for entering the Surgical Technology profession encompasses: knowledge, skill, professionalism, independent thinking and the ability to react quickly under stressful situations. This course will also allow for student exposure to exam questions similar to those seen on national Surgical Technology exams.

SUR 270 Biomedical Science and Minimally Invasive Surgery**2 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; SUR 110, SUR 170, SUR 180 and SUR 181, minimum grade "C+"
15 lecture, 30 lab, 0 clinical, 0 other, 45 total contact hours

In this course, students are introduced to the areas of information technology, electricity, laser and robotics as they apply to the surgical technologist role in minimally invasive surgery. As surgical equipment becomes more technical, understanding the fundamental principles of these technologies is essential to the entry-level surgical technologist. Students will practice and be evaluated on their surgical technologist support skills in robotics and minimally invasive surgery.

SUR 270A Biomedical Science and Minimally Invasive Surgery Lecture**1 credit**

Level I Prerequisites: Academic Reading and Writing Levels of 6; SUR 110, SUR 170, SUR 180 and SUR 181, minimum grade "C+"
15 lecture, 0 lab, 0 clinical, 0 other, 15 total contact hours

In this course, students are introduced to the areas of information technology, electricity, laser and robotics as they apply to the surgical technologist role in minimally invasive surgery. As surgical equipment becomes more technical, understanding the fundamental principles of these technologies is essential to the entry-level surgical technologist. Students will practice and be evaluated on their surgical technologist support skills in robotics and minimally invasive surgery.

SUR 270B Biomedical Science and Minimally Invasive Surgery Lab**1 credit**

Level I Prerequisites: Academic Reading and Writing Levels of 6; SUR 110, SUR 170, SUR 180 and SUR 181, minimum grade "C+"
0 lecture, 30 lab, 0 clinical, 0 other, 30 total contact hours

In this course, students are introduced to the areas of information technology, electricity, laser and robotics as they apply to the surgical technologist role in minimally invasive surgery. As surgical equipment becomes more technical, understanding the fundamental principles of these technologies is essential to the entry-level surgical technologist. Students will practice and be evaluated on their surgical technologist support skills in robotics and minimally invasive surgery.

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 higher
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.

Trade Related Learning**TRL****TRL 100 Green Technologies for Roofing****1.5 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will be introduced to green technologies in the roofing/waterproofing industry. Through classroom and hands-on training, students will be provided with an in-depth study of the concept, installation, and maintenance of green roofing systems including vegetable roofs, photovoltaics, water retention systems and building envelopes. Students will also be provided with online resources and materials to use as a reference to create a course for their local training center. Limited to approved union program participants.

TRL 101 Signal Person Qualification**1.5 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will recognize and demonstrate the proper methods and use of hand, voice and system-generated crane signaling according to OSHA 29CFR part 1926 and ASME Standards 830.23, 830.3, and 830.5. Students will also be able to identify and demonstrate various aspects of crane dynamics and crane movements while signals are given. Students will prepare a lesson plan for presenting the 8-hour Qualified Signal Person course at their training center. Limited to approved union program participants.

TRL 102 Single-Ply Roofing**1.5 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will be introduced to the methods for installation, maintenance, and repair of single-ply roof systems. Through classroom and hands-on activities, students will learn installation and waterproofing techniques currently available in the industry, such as layup and detailing methods for Thermoplastic Polyolefin (TPO)/Polyvinyl Chloride (PVC) and Ethylene Propylene Diene Terpolymer (EPDM) roofing. Students will use online material and resources to develop a lesson plan that can be presented to their local training center. Limited to approved union program participants.

TRL 103 Competent Person Fall Protection**1.5 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will focus on techniques and procedures for a Competent Person in Fall Protection classification. Students will identify policy and procedures through OSHA (Occupational Safety and Health Administration) regulations and ANSI (American National Standards Institute) Z359.2 standards which are used in the roofing/waterproofing industry. Upon successful completion, students will be able to instruct the Competent Person in Fall Protection at their local training facility. Students will navigate online resources that can be used to develop these courses at their local Training Center as well. This course incorporates both classroom and extensive hands-on training using proper personal protective equipment (PPE). Limited to approved union program participants.

TRL 104 Understanding the Student Portal**1.5 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will recognize the Portal functions of the Roofers and Waterproofers Research and Education Joint Trust Fund (RWREJTF) website. Participants will review classes, courses, curriculum, and exam management from the perspective of both a student and an administrator. Students will identify the tools needed to fully navigate, manage and train users to use the Student Portal website. Limited to approved union program participants.

TRL 110 Internal and External Communications**1.5 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will analyze effective and efficient communication skills as they apply to workplace and classroom environments. Students will develop strategies to plan, prioritize, and complete tasks; make decisions; and communicate effectively. All students will create communications and a priority matrix that they can utilize at their local business facility and training center. Limited to approved union program participants.

TRL 148 Intermediate Computer Skills for the Trade Teacher**1.5 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students continue to develop computer skills needed for teaching in the trades. Students acquire skills in document and spreadsheet creation using MS Word and MS Excel, respectively. In addition, students explore the benefits of using web-based applications such as Google Docs and Google Sheets. Limited to approved union program participants.

TRL 211 Planning, Teaching, and Assessing Effective Lessons - Beginning 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

This is an introductory course for students to become familiar with skills needed to effectively teach adult learners, as well as accommodate and identify different learning skills and levels. Limited to approved union program participants.

TRL 212 Planning, Teaching, and Assessing Effective Lessons - Intermediate 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this intermediate course, students continue to develop skills to effectively teach adult learners. Students create lesson plans for various student learning styles and develop key instructional strategies such as requiring group work and incorporating visuals. In addition, they write clear and measurable objectives and design ways to assess them. Limited to approved union program participants.

TRL 213 Planning, Teaching, and Assessing Effective Lessons - Advanced 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will develop teaching skills by designing courses and using interactive teaching techniques. Students will review strategies for working with various learning skill levels, including ideas and procedures for working one-on-one with students. Classroom questioning strategies and discussions will also be explored. Limited to approved union program participants.

TRL 214 Developing and Presenting Effective Lesson Plans 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will organize and plan a course by developing a situational analysis as well as identifying course outcomes and objectives. Students will also create an assessment plan and schedule while designing rubrics and a course syllabus. Students will then use an eight-step problem-solving model to develop action plans for their own teaching programs. Students will present a short teaching demonstration of a lesson plan and learned material. Limited to approved union program participants.

TRL 222 Basic Computer for the Trade Teacher 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will be introduced to the basics of computers by producing professional looking documents using a personal computer. Students will also create spreadsheets to help prepare budgets and manage numerical information. In addition, students will be provided an overview of hardware and software, creating course handouts, spreadsheets and presentations using Word, Excel and PowerPoint. Limited to approved union program participants.

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 Residential 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.

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 journeymen. 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.

United Association Training**UAT****UAT 110 UA/MCAA Foreman Certification (UA 2012)****3 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6
45 lecture, 3 lab, 0 clinical, 0 other, 48 total contact hours

In this course, students will identify and complete the UA/MCAA Foreman Certification Exam. Students will utilize instructor presentations and student group discussions to develop methods for workplace and jobsite supervision. Students will also review and demonstrate the elements of the UA/MCAA Foreman Certification Exam as well as locate and navigate instructional resources to deliver course information at the local Training Center. The title of this course was previously UA/MCA Foreman Certification. Limited to United Association program participants.

UAT 112 Jobsite Leadership in the 21st Century for the Piping Industry (UA 2013) **1.5 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, the student will incorporate new techniques of jobsite leadership responsibility with existing practices to better communicate with today's generation of workers. Participants in this course will also explore the traits and skills needed to lead in the classroom as an effective instructor and in the field as an effective supervisor. Limited to United Association program participants.

UAT 113 Safe Bolting Practices (UA 2154)**1.5 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will identify and perform bolted joint assembly in accordance with American Society of Mechanical Engineers (ASME PCC-1) standards. Topics include torque, tension and friction, and their effect on the bolted joint. Students will use classroom theory and hands-on demonstrations for bolted joint components, including the factors of torque control by the assembler. In addition, students will demonstrate safe operation of powered torque and tension equipment. Limited to United Association program participants.

UAT 114 Safety Leadership (UA 2155)**1.5 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, United Association members will develop strong safety practices and communication skills to become UA Safety Leaders. Students will be trained to work with crews, contractors, and owners on large-scale construction projects to provide safety coordination and communication in the workplace. Students will establish procedures for interventions for non-compliance of OSHA safety regulations. Limited to United Association program participants.

UAT 115 Emerging Safety Technology (UA 2156)**1.5 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6**22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours**

In this course, students will recognize emerging technological advances in safety equipment being made in the construction industry. Students will interpret the functions, benefits, costs, and proper use of the new wearable technology. Limited to United Association program participants.

UAT 116 Advanced Revit (UA 3026)**1.5 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6**22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours**

In this course, students will utilize the latest Autodesk Revit software and explore the advanced uses of Autodesk Revit MEP as a complete design-to-fabrication VDC/BIM (Virtual Design Construction/Building Information Modeling) tool for the pipe trades. This hands-on course will introduce them to advanced methods of pipe routing. In addition, students will learn how a coordinated model is processed into installation shop drawings, spool maps, and fabrication spool sheets. Limited to United Association program participants.

UAT 117 Robotic Total Station Layout-Leica (UA 3032)**1.5 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6**22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours**

In this course, students focus on using the Leica Robotic Total Station. Participants will learn setup, layout, and Quality Assistance/Quality Control (QA/QC) with an emphasis on hands-on learning the latest equipment and software. Training will include how to verify building control points to other levels of a structure, load layout points from a model into the total station, and load points back into the model. Limited to United Association program participants.

UAT 118 Clamping, Reforming, and Pipe Aligning (UA 5023)**1.5 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6**22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours**

In this course, students will be taught the various types of clamps used in the fabrication and installation of piping systems. Application-based training for the proper selection of clamps used to perform various pipe joining configuration will be emphasized. Lab exercises will focus on the proper use of pipe clamps, including safety, clamp set-up, joint fit verification, and preventative maintenance of equipment. Limited to United Association program participants.

UAT 119 HVACR Residential Technician (UA 6028)**1.5 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6**22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours**

In this course, students will focus on performance testing of residential Heating, Ventilation, Air Conditioning, Refrigeration (HVACR) equipment, measuring and analyzing of data for air flow, water flow, and electrical power input. Students will perform practical exercises on testing equipment training modules and/or functional building equipment. Upon completion, students are required to submit documentation on two field performance tests from their training center. Limited to United Association program participants.

UAT 120 Principles of Project Management (UA 2015)**1.5 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students examine construction project management and the responsibilities of a project manager. Students will be able to define and chart the life cycle of a construction project from conception to completion, including estimates, templates, and warranty items. Administrative processes and responsibilities of trade and business are explained and discussed using a sample project and flow chart. Limited to United Association program participants.

UAT 122 Adapting Apprenticeship to the 21st Century (UA 2100)**1.5 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will examine the generational characteristics and relationships among coordinators, instructors, and younger apprentices. Presenters from the training industry will discuss common problems and possible solutions to better communicate and recruit Gen Y (born 1980-1994) for the skilled trade industry. In addition, there will be discussions of available resources on how to effectively recruit future generations, including Gen Z (born 1995-2015) and beyond. Limited to United Association program participants.

UAT 123 Fall Protection (UA 2158)**1.5 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will review the OSHA (Occupational Safety and Health Administration) policies regarding fall protection by focusing on ANSI Z359.2 and USACE EM-385.1-1 standards. This course focuses on workers' safety while working at heights and the systems used to protect workers from falls. The student will obtain instructional materials to conduct the EM 385 Competent Person and Authorized Person courses. Upon successful completion of the course, the student will receive a certification of OSHA 3115 Fall Protection course and meet or exceed ANSI and USACE requirements as a Competent Person and Competent Person Trainer. Limited to United Association program participants.

UAT 124 Trenching and Excavation - Competent Person Trainer (UA 2159)**1.5 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; OSHA 500 or OSHA 502 certification card
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will examine the current Occupational Safety and Health Administration (OSHA) Trenching and Excavation Standards used in the construction industry. Students will utilize newly-developed technology such as interactive e-learning modules, job site mobile apps, and complete trainer guides. This course involves classroom theory as well as hands-on interaction. Upon completion, students will be able to teach certified competent person level training at their local Training Center. Limited to United Association program participants.

UAT 125 Introduction to CAD (UA 3019)**1.5 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will comprehend introductory concepts of Computer-Aided Drafting and the environment and techniques of CAD instruction. The course emphasizes the fundamentals of AutoCAD software, as well as the creation and modification of two-dimensional objects. Instructions on creating and using drawing and template files, creating layers, annotation, dimensioning, and printing drawings will be included. Limited to United Association program participants.

UAT 126 Autodesk Fabrication CADmep (UA 3024)**1.5 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will review functions and features of Autodesk Fabrication CADmep software. Students will study basic 3D models as well as prepare field drawings and procurement documents. Upon completion, students will create documents for prefabrication of piping, custom fabrication using Fabrication CADmep and shop drawings with annotation spool drawings. Limited to United Association program participants.

UAT 127 Comprehensive Management of New Refrigerants, Regulations, and Safety Issues (UA 6022)**1.5 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will focus on refrigerant management safety and the changes the EPA (Environmental Protection Agency) is developing for the section 608 of the Clean Air Act. Students will be able to distinguish between the standard HFC (HCFC) refrigerants and the new HC and HFO refrigerants, their retrofits, and proper handling as per ASHRAE Standard, as applied to the refrigeration and cooling industry. Limited to United Association program participants.

UAT 128 Troubleshooting Residential HVACR Systems (UA 6061)**1.5 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will identify proper installation, start-up, and commissioning of a residential Heating, Ventilation, Air Conditioning, and Refrigeration (HVACR) systems. Students will also apply both a classroom and hands-on approach to testing and troubleshooting new and existing systems for proper operation. They will review instructional resources and activities that can be applied at their local Training Center. Limited to United Association program participants.

UAT 129 Servicing Residential HVACR Electrical Systems (UA 6064)**1.5 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will identify common electrical terms and ordinary methods used in residential HVACR wiring. Electrical plans will be reviewed to illustrate proper installation techniques as well as the electrical safety involved. A hands-on lab will allow students to install and test residential electrical components. Participants will also be introduced to the UA software (UA Circuit Builder) developed for use on Blackboard and the resources available in the Instructor Resource Library (IRL). Limited to United Association program participants.

UAT 130 Fire Pump Inspection, Testing, Maintenance, and Repair (UA 7040)**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 proper procedures and develop methods needed to teach the operation, inspection, testing, maintenance, and repair of fire pumps. Students will also be introduced to the code requirements per National Fire Protection Association NFPA 20 and NFPA 25 as well as plotting pump curves necessary for proper fire pump operation. Limited to United Association program participants.

UAT 132 Understanding Fire Alarm Panels and Initiating Devices of Fire Protection Systems (UA 7060) 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students study fire alarm electrical circuits and fire control panels that pertain to fire protection sprinkler systems. Students will review the concepts of low voltage electricity as well as identify electrical testing methods for alarm devices within the fire alarm system. In addition, students will also demonstrate the hands-on installation, operation, troubleshooting and repairing procedures of these devices with the system. Limited to United Association program participants.

UAT 133 AWS-CWI Preview (UA 8041) 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students gain the information and skills required to successfully complete the application process for the AWS-CWI (American Welding Society-Certified Welding Instructor) credentials in accordance with the AWS QC1 standard. Students will also develop skills to prepare for the 60 hour United Association Prep Course and Exam. Limited to United Association program participants.

UAT 134 Safety Culture Training for Front Line Leaders (UA 2161) 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will develop materials and methods to instruct front line leaders in the construction industry and to establish a collaborative safety culture for employees to report their safety concerns. Through a combination of lecture, demonstration, case study, group exercises, facilitated discussion, and teach-backs with instructor evaluation, the course prepares the students to instruct an 8-hour course for front line leaders at their local training facility. Limited to United Association program participants.

UAT 135 Industrial Rigging Certification (UA 5011) 3 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
45 lecture, 3 lab, 0 clinical, 0 other, 48 total contact hours

In this course, students will identify and develop methods for incorporating a rigging course and curriculum taught at their local Training Center. Students will define and demonstrate safe rigging practices, virtual and actual hand-signaling, crane and equipment set-up, sling stress and center of gravity calculations. In addition, students will prepare for and take the Electrical Power Research Institute (EPRI) certification exam on rigging. Limited to United Association program participants.

UAT 136 Daikin VRV Systems (UA 6013) 1.5 credits

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will study the Daikin variable refrigerant volume (VRV) system, a multi-split type air conditioner that uses VRV control. Through classroom and hands-on activities, students will cover the history, installation, and VRV technology, including 401A refrigerant and the piping required. In addition, students will review the electrical and VRV control requirements, wiring, and net communications including simulation software available for use at their local Training Center. Limited to United Association program participants.

UAT 137 Radiographic Film Interpretation (UA 8011)**1.5 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will acquire the basic skills and techniques required to view and interpret radiographic films (x-rays) as they relate to the welding industry. Students will be introduced to the theory and hands-on practical labs for interpreting x-ray films to access the quality of piping welds as well as installation, calibration, operation, and maintenance of equipment. Limited to United Association program participants.

UAT 138 Apprentice Standard Guidelines (UA 9001)**1.5 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students take an in-depth look at apprenticeship standards and how they can affect the operation of a United Association local training program. Students will cover the United Association National Guideline Standards developed by the International Pipe Trades Joint Committee as well as regulations put into place by the U.S. Department of Labor under 29 CFR 29.29 and 29 CFR 29. The course will involve group discussions on apprenticeship standards. Limited to United Association program participants.

UAT 139 Administration of a Jointly Managed Training Program (UA 9002)**1.5 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; UAT 138 may enroll concurrently
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will be provided with an overview on managing and administering a United Association training program. Through a combination of lecture and discussion, students will examine topics on industry trends, laws affecting training programs, instructional methods, and curriculum requirements. Students will also review the Council of Occupational Education (COE) accreditation process and the benefits of UA accreditation of their apprenticeship programs. Limited to United Association program participants.

UAT 140 Occupational Safety and Health (UA 2150)**1.5 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will learn the safety and health principles and OSHA policies, procedures and standards as they apply to the construction industry. Special emphasis is placed on those areas that are the most hazardous, using OSHA standards as a guide. Limited to United Association program participants.

UAT 142 Using the Multi-Craft Core Curriculum (UA 9008)**1.5 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students are introduced to an overview of the Multi-Craft Core Curriculum (MC3) as developed by North America's Building Trades Union (NABTU). Students will outline different industry crafts, basic math, OSHA regulations, and trade skills associated with union labor. The MC3 curriculum is utilized in schools, colleges, and adult re-entry programs to prepare students for an Apprenticeship Readiness Program for careers in the construction trades. Limited to United Association program participants.

UAT 143 Veterans In Apprenticeship (UA 9007)**1.5 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will receive an overview of the United Association Veterans in Piping (VIP) program. Students will review policies and procedures of the Veterans' Administration (VA) and the Department of Defense (DOD) as it pertains to post-military education. The course will also examine the signs, symptoms, and treatment of Post-Traumatic Stress Disorder (PTSD), and provide resources when an apprentice may be exhibiting symptoms. Limited to United Association program participants.

UAT 144 Legal Issues and Fiduciary Responsibilities (UA 9003)**1.5 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will examine the legal and fiduciary responsibilities that exist when operating a jointly-managed United Association (UA) training program. Discussions will be held on trust documents, legal documentation, prohibited transactions, and limited usage of grants. Other topics covered will include state and federal employment laws, Civil Rights Act, discrimination and harassment, and the Americans with Disabilities Act, which relate to apprenticeship program operation. Limited to United Association program participants.

UAT 145 Teaching U.A. STAR Review (UA 2014)**1.5 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will develop the skills needed to create a 16-hour preparation course for the UA STAR certification exams in HVACR, steam fitting/pipefitting and plumbing. Students will learn how to utilize online interactive review materials for the UA STAR exam. In the final four hours of the class, students will take the NITC proctored UA STAR exam. Limited to United Association program participants.

UAT 146 Introduction to Microturbines (UA 6011)**1.5 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will study the operation and installation of Combined Heat and Power (CHP) systems using microturbines. Students will calculate heat and power applications as well as identify adaptations needed to retrofit standard heating systems in commercial buildings and industrial settings. It is recommended that students have prior knowledge of the operating principals of CHP systems to participate in the course. Limited to United Association program participants.

UAT 147 Safe Pressure Testing for Piping Systems (UA 2160)**1.5 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will study safe pressure testing techniques of the piping systems using either pneumatic or hydrostatic methods. Students will review possible hazards associated with elevated pressures and the regulatory requirements governing safe work practices for industrial, plumbing and refrigeration piping systems. Students will identify and successfully plan, perform, and document pressure tests as well as develop a lesson plan to use at their local training center. Limited to United Association program participants.

UAT 148 Intermediate Computer Skills for the Trade Teacher**1.5 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; UAT 222 minimum grade "C" or equivalent knowledge of computer skills**22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours**

In this course, students continue to develop computer skills needed for teaching in the trades. Students acquire skills in document and spreadsheet creation using MS Word and MS Excel, respectively. In addition, students explore the benefits of using web-based applications such as Google Docs and Google Sheets. Limited to United Association program participants.

UAT 149 Introduction to Service Management (UA 2016)**1.5 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6**22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours**

In this course, Service Technician Journeymen will learn to transition from a field work status to an office service management position. Using their prior field experience and leadership skills, students will explore the duties and responsibilities of a management role. Students will have interactive sessions to identify skills in dispatch, sales, finances, and scheduling. Emphasis will also be placed on communication skills. Limited to United Association program participants.

UAT 150 Incorporating Pipe Pre-Fabrication into Apprenticeship (UA 5016)**1.5 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6**22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours**

In this course, students will identify the journeyman pipe fabricator's roles and responsibilities in the growing trend of journeyman fabricators in the pipe industry today. Students will utilize methods and procedures used to prefabricate welded pipe from concept to completion in both the shop and field environments. In addition, students will then develop a fabricator lesson plan for a course that can be used at their home Training Center. Limited to United Association program participants.

UAT 152 Utilizing Jobsite Technology (UA 3050)**1.5 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6**22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours**

In this course, students will be introduced to new jobsite management equipment and technology that is changing the way projects are handled and completed. Students will apply technology and hands-on sessions to include Building Information Modeling (BIM), Computer Aided Design (CAD), Field and Glue 360 on iPads, 3-D laser scanners, and robotic layout devices. Additionally, students will also review virtual reality eyewear and field-related augmented reality scenarios. Limited to United Association program participants.

UAT 153 Robotic Station Layout Topcon (UA 3031)**1.5 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6**22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours**

In this course, students will be exposed to the effective operation of a robotic station layout (RSL) as it applies to the construction jobsite. Students will discuss the technological advantages of the RSL system and compare and contrast the system to standard blueprints. Students will review available models of robotic station systems and software and incorporate their selection into a training plan. Limited to United Association program participants.

UAT 154 Safe Handling of Refrigerants (UA 6029)**1.5 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will identify potential hazards of refrigerants in HVACR equipment which can include toxicity, flammability, asphyxiation, and physical hazards. In addition, students will determine system design, engineering controls, and other techniques that might mitigate the risks involved in using refrigeration in various types of equipment. This course will cover EPA criteria and testing for section 608, as well as ASHRAE standards 15 and 34. Students will create lesson plans to be used at local training facility to prepare others for the EPA exam. Limited to United Association program participants.

UAT 155 Precision Weld Preparation and Field Machining of Pipe (UA 5024)**1.5 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will adapt their existing pipefitting weld preparation practices with the growing demands of heavy industrial work safety practices when using precision weld preparation equipment. Students will gain hands-on experience using Tri Tool and E.H. Wachs heavy wall machining equipment with emphasis placed on operation and safety. Limited to United Association program participants.

UAT 156 Commercial and Residential Boiler Service (UA 6063)**1.5 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will identify proper installation and service requirements of standard and high efficiency boilers in both the commercial and residential markets. Students will differentiate types of boiler designs, applications, and piping systems, including the modifications needed for replacing older boilers with new condensing types. Students will also identify various controls, read schematics, as well as perform basic combustion and troubleshooting skills. Limited to United Association program participants.

UAT 157 Smart Home Technology (UA 6065)**1.5 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will demonstrate the ability to interface electronic and mechanical devices for the residential smart-home service market. Devices covered will include security monitoring capabilities, temperature modulation and control, lighting and access control, along with remote building monitoring. Device installation and commissioning will also be covered in the hands-on lab portion of this course. Limited to approved union program participants.

UAT 158 Pump Installation Service and Maintenance (UA 6017)**1.5 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will recognize and evaluate proper pump selection and installation for various piping systems. Students will focus on pump performance, including pump curves, as well as operating characteristics and installation practices. Proper servicing techniques, repair procedures, and laser alignment methods will be discussed and demonstrated in a hands-on lab using manufacturers' recommendations. Limited to United Association program participants.

UAT 159 Teaching HVACR Service Apprenticeship Curriculum (UA 6000)**1.5 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

This course is intended to assist students in developing and presenting classroom instruction in the subtopics relating to the five-year Heating, Ventilating, Air Conditioning, and Refrigeration (HVACR) Apprenticeship Training Program. Students will identify the subject matter that makes up a five-year program along with the creation of a syllabus and lesson plan to be used as a model at their local Training Center. Limited to United Association program participants.

UAT 160 Implementing a Gas Distribution System (UA 5025)**1.5 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will demonstrate the process and procedures involved in electrofusion of pipe joint connections of plastic gas distribution lines used in the installation for residential meter settings. They will perform manual fusion, hydraulic butt fusion, sidewall fusion, and line taps under pressure (hot taps). Students will take the McElroy instrument certification exam. Limited to United Association program participants.

UAT 170 Introduction to Teaching Online Using Blackboard**1.5 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will create a customized Blackboard course using some of the basic content areas in a blank Blackboard course site. Students will identify various file types and online resources that can be used to create the course. Also, students will add users to their course as well as create and publish a test from a pool of written and downloaded questions. Students will evaluate added users and create final averages including downloading their gradebooks. Limited to United Association program participants.

UAT 172 Utilizing UA Classroom Techniques (UA 3007)**1.5 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will obtain the necessary skills to effectively teach the next generation's workforce through hands-on approaches and interactive teaching tools. Students will be exposed to the latest virtual reality, augmented reality, and online resources developed by the International Training Fund. Limited to United Association program participants.

UAT 173 BIM-VDC Workflow in the Construction Industry (UA 3100)**1.5 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will examine the Building Information Management (BIM) process and determine how it fits into the Virtual Design and Construction (VDC) workflow. Students will demonstrate the VDC workflow on a small project for the plumbing, mechanical and fire protection industries. In addition, students will examine how a BIM project follows the workflow process from conception to installation. Students will implement materials and models in various VDC courses at local Training Centers. Limited to United Association program participants.

UAT 174 Laser Scanning: Reality Capture for Construction (UA 3035)**1.5 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will use laser scanning equipment and related software to create 3D point clouds of existing buildings and Mechanical, Electrical, and Plumbing (MEP) systems, using Building Information Modeling (BIM) applications for use at local Training Centers. As part of a hands-on lab, students will scan an existing mechanical equipment room, and point clouds will be produced for spatial coordination and as-built applications utilizing available software. Limited to United Association program participants.

UAT 175 Utilizing Revit® for UA Training (UA 3095)**1.5 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will create 2 and 3 dimensional piping models using Autodesk Revit ® software. Students will create project plans and develop isometric and elevation drawings, which can be annotated and saved as PDFs. These models can be used for training exercises and lessons in their instructional courses at their local Training Centers. Limited to United Association program participants.

UAT 176 Addressing Barriers to Apprenticeship Success (UA 9006)**1.5 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will develop tools and resources to integrate communication skills with apprentices at their local Training Center. Students will focus on motivational tools designed to enhance the coordinator/ apprentice relationship by using real-life scenarios to address a variety of issues that include cultural diversity, emotional intelligence, distress or emotional dysregulation, violence, and substance abuse. In addition, students will develop skills including reflective listening, open ended questions, motivational techniques. Limited to United Association program participants.

UAT 178 Viking Foam Fire Protection System Training (UA 7002)**1.5 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will be introduced to the components and operation of Viking Foam Fire Protection Systems and is intended for students who want to add this training to their local Training Centers. This hands-on course will cover installation requirements for Viking foam systems along with proper operation and setup. Students will perform inspections and tests to better understand how to troubleshoot, repair and maintain Viking Foam protection systems. Limited to United Association program participants.

UAT 179 Reliable Automatic Fire Sprinkler Valve Training (UA 7032)**1.5 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will gain the essential skills needed to qualify members in the installation, troubleshooting, and repair of Reliable Automatic Fire Protection valves and essential components at their local Training Center. Students will explore the history of Reliable Automatic Sprinkler Corporation and current fire protection valves and equipment in this combination of classroom and hands-on learning environments. Limited to United Association program participants.

UAT 180 National Fire Protection Association (NFPA) Codes (UA 7070)**1.5 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will become proficient with the National Fire Protection Association (NFPA) standards, including how they are developed and the rules that govern them. Students will review the make-up of NFPA technical committees and their responsibilities, how the consensus mechanism works, and the course of actions required to apply for technical committee positions. Limited to United Association program participants.

UAT 181 Fire Pumps and Inspection (UA 7041)**1.5 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will learn teaching methods, working procedures and skills involved in the proper installation, inspection, and testing of various types of Aurora fire pumps. The course includes hands-on workshops in which participants will inspect, test, adjust, and troubleshoot problems, as well as perform a pump test. Furthermore, this course will also address code requirements for National Fire Protection Association (NFPA) 20, 25, and Protective Personal Equipment (PPE) for NFPA 75. Limited to United Association program participants.

UAT 182 Fire Pump Installation, Repair, and Maintenance (UA 7042)**1.5 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will learn the proper installation, maintenance, and repair of various types of Aurora fire pumps in accordance with code requirements per NFPA 20 and NFPA 25. Participants will also develop the best practices in how to detect problems and make necessary repairs through hands-on work. Limited to United Association program participants.

UAT 199 Operation of Destructive Cutting and Strap Bending Equipment for UA Weld Test (UA 8042)**1.5 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will perform the safe handling and operation of weld test equipment as verified by a United Association Authorized Testing Representative of Certified Weld Inspectors. Attendees will review procedures of weld testing by ASME code requirements for bend and destructive cutting test of equipment at the regional Authorized Testing Facility. Limited to United Association program participants.

UAT 206 Improvement of Technical and Professional Relationship Skills for Supermarket Applications (UA 6002)**1.5 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will be presented with emerging technologies in the Heating, Cooling, Air Conditioning, Refrigeration (HVACR) service as it applies to the supermarket industry. With these tools and technology, the students will enhance their skills to develop professional relationships to customers and co-workers. Limited to United Association program participants.

UAT 209 Methods in Teaching Backflow Prevention Certification (UA 4006)**3 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6
45 lecture, 3 lab, 0 clinical, 0 other, 48 total contact hours

This course prepares students to establish teaching certification classes for backflow testing at their local Training Center in accordance with the American Society of Safety Engineers (ASSE) Series 5000 Professional Qualification Standard. Students will identify the code requirements along with practical set-up and use of a wet lab to train individuals on backflow testing procedures. In a hands-on lab, students will test and troubleshoot various sizes and types of backflows using certified equipment. Limited to United Association program participants.

UAT 210 Public Speaking**1.5 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 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 Planning, Teaching and Assessing Effective Lessons - Beginning**1.5 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

This is an introductory course for students to become familiar with skills needed to effectively teach adult learners, as well as accommodate and identify different learning skills and levels. Limited to United Association program participants.

UAT 212 Planning, Teaching and Assessing Effective Lessons - Intermediate**1.5 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this intermediate course, students continue to develop skills to effectively teach adult learners. Students create lesson plans for various student learning styles and develop key instructional strategies such as requiring group work and incorporating visuals. In addition, they write clear and measurable objectives and design ways to assess them. Limited to United Association program participants.

UAT 213 Planning, Teaching and Assessing Effective Lessons - Advanced**1.5 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will develop teaching skills by designing courses and using interactive teaching techniques. Students will review strategies for working with various learning skill levels, including ideas and procedures for working one-on-one with students. Classroom questioning strategies and discussions will also be explored. The title of this course was previously Planning and Presenting Lessons. Limited to United Association program participants.

UAT 214 Developing and Presenting Effective Lesson Plans**1.5 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will organize and plan a course by developing a situational analysis as well as identifying course outcomes and objectives. Students will also create an assessment plan and schedule while designing rubrics and a course syllabus. Students will then use an eight-step problem-solving model to develop action plans for their own teaching programs. Students will present a short teaching demonstration of a lesson plan and learned material. The title of this course was previously Techniques in Classroom Interaction. 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
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 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 217 Welding Phase Array (UA 8036)**1.5 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will be introduced to the principles and process of Phase Array Ultrasonic Testing (PAUT). Students will analyze test results using the Phase Array computer display information to determine and assist in the detection of the location, size and characterization of weld defects. In addition, the course will address the key steps to passing the PAUT weld inspections. Limited to United Association program participants.

UAT 218 AWS-CWI Recertification (UA 8039)**1.5 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will be introduced to the American Welding Society-Certified Weld Inspector (AWS-CWI) re-certification qualification process. Students will review the AWS-QC1 (Quality Control) documents and standards. An emphasis will be placed on the duties and responsibilities involved in maintaining credentials. Students will also be introduced to other types of AWS re-certifications available while becoming familiar with the documentation necessary. Limited to United Association program participants.

UAT 219 Introductory ATR Training**3 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; Must have a visual acuity examination document completed by a doctor prior to attending the class. This document must be brought to class; High school diploma or equivalent; Minimum 7 years UA Journeyman experience or completion of UA's Apprenticeship program and 2 years UA Journeyman experience; Minimum 2 years experience in UA welding instruction; Letter of recommendation from Local Union Management
45 lecture, 3 lab, 0 clinical, 0 other, 48 total contact hours

In this course, students will be introduced to the fundamentals of the UA Welder Certification Program. Participants will develop the knowledge and skills 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. At the conclusion of this course, the student will be ready to complete the UA ATR examination. 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
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students learn 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 222 Basic Computer for the Trade Teacher**1.5 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will be introduced to the basics of computers by producing professional looking documents using a personal computer. Students will also create spreadsheets to help prepare budgets and manage numerical information. In addition, students will be provided an overview of hardware and software, creating course handouts, spreadsheets and presentations using Word, Excel and PowerPoint. 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, 3 lab, 0 clinical, 0 other, 48 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
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will learn about methods of teaching about the various types of plumbing fixtures. Students will discuss and develop skills to instruct in topics such as 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, 1.5 lab, 0 clinical, 0 other, 24 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 228 Online Teaching Techniques**1.5 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students explore the use of online resources such as Blackboard 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 230 3D Computer-Aided Drafting (CAD)**3 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6
45 lecture, 3 lab, 0 clinical, 0 other, 48 total contact hours

In this course, students learn methods of teaching 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, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will receive instruction in "Green" awareness that emphasizes concepts and principles related to the specification, purchase and application of energy-efficient products. Upon successful completion of this course and a 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
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will develop methods for teaching about drainage. Topics to be taught 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 233B Introduction to Building Information Modeling (BIM)**3 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6
45 lecture, 3 lab, 0 clinical, 0 other, 48 total contact hours

In this course, students receive an update on changes to BIM tools such as AutoCAD, NavisWorks Manage and Quickpen Pipe Designer 3D software. They explore the critical aspects of Building Information Modeling (BIM) as applied to piping coordination, fabrication and installation within the piping model production environment. Students discuss and develop skills to instruct in topics such as process and procedure issues relating to the on-the-job application of the BIM piping model within the three-dimensional environment, 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
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will learn how to create a local union website and 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 student will have a working website for their local union, purchase their own domain name (dot-com address), and have their site published on the Web. Students will also learn various strategies for promoting their local union and learn about recruiting using the Internet and mass media. 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
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this train-the-trainer course, student instructors will be certified to teach and to conduct the Coyne basic life support/first aid training program. The Coyne's program is accepted by OSHA. 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 238 Methods of Teaching Downhill Welding**1.5 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 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
60 lecture, 0 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
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will learn about methods and techniques used to teach applied electrical fundamentals. Following a review of the fundamental electrical principles and the electrical controls commonly used in the pipe trades, students will learn to instruct apprentices how to read and interpret symbols, schematics and wiring diagrams, use simple test equipment. Safety will be stressed as apprentices are taught 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, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will be provided with information on the latest advancements in advanced potable hot water and water supply systems and technologies. Green technologies, such as rainwater harvesting, water re-use, solar thermal potable water heating and geo-thermal systems, are also discussed. Students will develop teaching methods for topics such as water mains and services; building water supply systems; and cross connections, valves and pumps. Emphasis will be given throughout the course on the best way to develop the student instructor's own local training program. 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
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will learn 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 243C UA Pipe Trades Trailer Operations**1.5 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will learn about 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 244 Fundamentals of Variable Frequency Drives**1.5 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will use presentation materials and teaching techniques to introduce a VFD class in their curriculum. Students who take this course should have a good knowledge base of electrical controls and AC induction motors and should be working in the HVAC service field. Installation, setup/programming and troubleshooting techniques will be covered along with associated hands-on activities. Limited to United Association program participants.

UAT 245 Teaching with ExamView**1.5 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students are introduced to the best practices of how to use the ExamView Assessment Suite software to create, administer and manage assessments. Utilizing existing question banks, students will design and create question banks and tests, which can then be administered in printed format, on a local area network, or through the Blackboard learning management system. Converting existing testing materials into ExamView compatible format and building new test questions using multiple question formats 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
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will learn to teach concepts of achieving integrity in a bolted joint, the theory of how a bolted connection works dynamically as a piece of equipment, the calculations required to tighten a flange to 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
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will learn about 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. Students will examine common problems that develop from not understanding the Code requirements. The development of Quality Control Manuals for Code use, and the application for an ASME Pressure Piping Stamp and its renewal requirements will be covered. Limited to United Association program participants.

UAT 248 Valves**1.5 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 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
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will learn about methods of teaching the fundamental theories and practical applications of arc welding. Following a review of arc welding techniques and practical applications, students will develop welder training programs specific to local industry. Training program 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, oxy-fuel cutting and setting up welding equipment for production welding and performance qualifications. Related topics include F numbers, shielding gases, welding electrode classifications, process definitions and theories, consumable selection, storage and handling procedures. 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
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will learn about methods of teaching advanced plan reading and related drawing. Topics of instruction 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
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will learn about methods of teaching about the principles of science for plumbing and pipe fitting tradespeople. Following a review, students will discuss and develop skills to instruct on topics such as properties and characteristics of water and steam, hydraulics and pneumatics, mechanics, metals, alloys, synthetics and corrosion. Students will generate ideas for their own classrooms to teach the science related to both the plumbing and pipe fitting 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, 3 lab, 0 clinical, 0 other, 48 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
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will learn about methods of teaching about the copper piping systems. Topics of instruction 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. Students will also review 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
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will learn methods of teaching the maintenance and repair of centrifugal water chiller controls, including electrical and electronic applications. Fundamentals of microprocessors in relation to control of solid state starters, frequency drives and control systems associated with centrifugal water chillers are covered. 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
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will learn about methods of teaching the basic fundamentals of rigging. Topics to be covered include: rigging safety in basic knots and their uses, wire ropes, web slings, load calculations 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 257 Hydronic Heating and Cooling**1.5 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will learn methods of teaching the installation, maintenance and repair hydronic heating and cooling systems. 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 259 Backflow Repair and Maintenance**1.5 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will learn about methods of teaching 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 261 Thermoplastic Fusion**1.5 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will learn methods of teaching 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 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
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will learn about methods of teaching 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. Methods of teaching with the Isometric compass are also applied. 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
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will learn methods of teaching the basic fundamentals of direct digital control and various building automation system applications as applied to the HVACR industry. Students should have HVACR control experience. Limited to United Association program participants.

UAT 265 HVACR Apprenticeship Practicum**1.5 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will learn about and develop methods of teaching the different sub-topics related to the Five-Year Heating, Ventilating, Air Conditioning and Refrigeration apprentice training program. The use of pressure-enthalpy diagrams as a teaching aid will be stressed. The HVAC Training Manual and associated Student Study Guide/Lab Manual, Instructor's Guide and DVD Series will be used as teaching tools. The ExamView test development program, its applications and how to teach with these tools will be demonstrated. This course, which also focuses on developing classroom presentation skills, will prepare students to teach an introductory HVACR familiarization course to people who have limited HVACR 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
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, UA instructors will be equipped with presentations, resources and hands-on demonstration and evaluation exercises to conduct HVAC Start-Test and Balance training as well as methods of teaching about air and water balance. The principles of teaching heat transfer and fluid flow as related to hydronic balancing and system performance as well as electrical testing and measurement will also be covered. The installation, maintenance, repair 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
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 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
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will learn to teach the mechanics, protocols and proper techniques of sprinkler fitting and the adaptation of various codes and product changes in the fire sprinkler industry. Topics include teaching about fire sprinkler alarms, fire sprinkler spray patterns, sprinkler inspections, lift training, technical changes to NFPA and water mist. Students must have prior experience with sprinkler fitting before enrolling in this course. Limited to United Association program participants.

UAT 269 Medical Gas**3 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6
45 lecture, 3 lab, 0 clinical, 0 other, 48 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 270 Properties of Metals**1.5 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will learn methods of teaching 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 272 Wire Feed Orbital Welding**3 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6
45 lecture, 3 lab, 0 clinical, 0 other, 48 total contact hours

In this course, students will learn methods of teaching wire feed orbital welding. Topics include teaching wire feed orbital equipment capacity/capabilities and their accessories; installation and set-up of equipment; machine and weld head calibration; 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 274 Oxy-Fuel Cutting and Welding**1.5 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will learn about methods of teaching oxy-fuel safety, welding, layout and cutting procedures. Students will demonstrate proper techniques and procedures employed in successfully teaching this subject. Each student will have the opportunity to try the methods being discussed. The technical aspects of teaching as well as the practice of cutting and welding pipe with oxy-fuel will also be covered. Students selecting this course should come to class in safe working clothes. The title of this course was previously Oxy-Acetylene Cutting and Welding. Limited to United Association program participants.

UAT 275 Trade Related Trigonometry**1.5 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will learn about methods of teaching the principles of trade-related trigonometry. Following a review, students will discuss and develop skills to instruct on topics such as trigonometry, application of a right triangle, Pythagorean theorem, rolling offsets (including cut-downs/degree of roll), equal spread offsets and miter joints. Teaching techniques will be addressed and problematic areas will be discussed to provide student instructors with ideas for their own classrooms teaching. Limited to United Association program participants.

UAT 276 Orbital Tube Welding**1.5 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will learn methods of teaching 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 278 GTAW Wire Feed Welding**3 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6
45 lecture, 3 lab, 0 clinical, 0 other, 48 total contact hours

In this course, students will learn methods of teaching 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
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 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 283 Art of Tube Bending**1.5 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will demonstrate both the simple and Set Back, Advance and Gain (SAG) measurement method of tube bending. Students will identify the bender procedure while using trigonometry as it relates to degree bends and layout. Discussions, explanations and hands-on demonstrations will allow students to layout multiple parallel offsets, along with lineup/leveling of tubing in the bending process. An emphasis will be placed on the reading of isometric drawings, wire templates, and numbering of the bending order. 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
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will learn about methods of teaching the techniques of gas metal arc welding (GMAW). Safety, set-up and minor maintenance and repair of GMAW equipment, selection of project consumables, selection of the proper gases and troubleshooting techniques will be emphasized. Hands-on welding instruction demonstrations 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 286 Industrial Refrigeration Trainer**1.5 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will learn methods of teaching basic commercial refrigeration concepts using the Hampden Industrial Refrigeration Trainer (IRT). Topics 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 288 Shielded Metal Arc Welding**1.5 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will update their skills and learn methods of teaching Shielded Metal Arc Welding (SMAW) and Oxy-Fuel Cutting & Welding. Topics 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 is 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 290 Gas Tungsten Arc Welding**1.5 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will learn about methods of teaching Gas Tungsten Arc Welding. Course content consists of welding pipe in the 2G, 5G and 6G positions. Topics of instruction include 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 292 Pipefitting Layout**1.5 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will be introduced to the 57 ¼" method for pipefitting layout. Students will demonstrate layouts of simple, rolling, and mitered fittings along with odd angle fittings and laterals, all without using math. Students will also be able to lay out precise pipe angles of nozzles/o-lets on tanks and vessels as well as utilize the Pipe Trades Pro Calculator in pipefitting layout. Limited to United Association program participants.

UAT 294 Plumbing Service I**1.5 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will learn about methods of teaching plumbing service. Topics include the operational, installation, and safety aspects including troubleshooting 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 Plumbing Service II**1.5 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; UAT 294 minimum grade "B"**22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours**

This course continues instruction on customer service and marketing skills in the residential and commercial plumbing industry. Students will review and examine the local 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. Methods of teaching customer communication, social styles, salesmanship, marketing and the calculating the cost of doing business will also be addressed. 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
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will learn about methods of teaching 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 299 ATR Refresher Training**1.5 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will learn how to conduct and how to teach 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 302 Process Management for UA Technicians (UA 6003)**1.5 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will develop curriculum for their local training programs to prepare new apprentices for work in the service industry. Participants will focus on identifying safety concerns relevant to service work, such as arc flash and radio frequency exposures. This course will also present new technology including the use of mobile devices and related software. 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, 1.5 lab, 0 clinical, 0 other, 24 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 311 Confined Space**3 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6
45 lecture, 3 lab, 0 clinical, 0 other, 48 total contact hours

In this course, students will receive a five-day training that 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. Topics include legal issues, permit programs, ventilation and rescue as well as 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, 1.5 lab, 0 clinical, 0 other, 24 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 316 Administration of a United Association Weld Test (UA 8000)**1.5 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will learn the rules and responsibilities of the United Association Welder Certification Program (WCP) to become an Authorized Training Representative (ATR). These duties include administration and documentation functions as well as determining the acceptability of weld test assemblies. Students will develop a course plan to teach these responsibilities at their local training facility. Limited to United Association program graduates.

UAT 320 History of the Labor Movement**1.5 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will learn to teach the history and heritage of the Labor Movement into the 1920s. 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; UAT 320 minimum grade "C"
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will learn methods of teaching about the labor history and the UA from the 1920s to the present. This course continues the narratives of working people and the leaders who created enduring labor institutions. UAT 320, History of the Labor Movement, is a prerequisite for this course. Limited to United Association Instructor Training program graduates.

UAT 322 Labor History in the UA 1800 to Present**1.5 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students learn about and develop methods of teaching the struggles of the labor movement as it relates to the UA from 1800 to the present. The labor movement is the story of crises, courage and innovations that spans 350 years from colonial craftsmen into the twenty-first century. Special attention is paid to more recent history from the 1920's to the present day focusing on the creation and growth of the UA. Students will develop lessons plans incorporating events and people that have played an important role in labor history. Limited to United Association Instructor Training program graduates.

UAT 323 Financial Literacy for Apprentices (UA 2101)**1.5 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

This course is designed to provide students with the resources necessary to develop custom financial literacy to meet apprentices' needs at their local Training Center. Students will identify local and online resources and discuss budget and financial strategies for short- and long-term financial management and education. Students will plan for apprentice and journeyman wage advancements, seasonal and economic-related income fluctuations, as well as life-changing events. Limited to United Association Instructor Training program graduates.

UAT 324 Industrial Rigging Technologies (UA 5009)**1.5 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

This course covers industrial rigging technologies including precautions required when lifting materials and equipment. Students will calculate proper/safe rigging of loads as well as identify the proper maintenance of rigging equipment including personal protective equipment (PPE). Practical application of industrial rigging and virtual crane signaling training modules will be demonstrated. Limited to United Association Instructor Training program graduates.

UAT 325 Industrial Rigging**3 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6
45 lecture, 3 lab, 0 clinical, 0 other, 48 total contact hours

In this course, students will learn 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 351 Plumbing Codes**1.5 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students learn about methods of teaching the development, technical comparison, interpretation and practical application of model plumbing and mechanical codes. Also included is the history and development of plumbing codes and the development of the two models of plumbing codes in the Plumbing Code Application Manual and related CD. The UA Plumbing Code Manual will be used as the base document. 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, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will learn to teach welding procedure specifications and welder qualifications in accordance with Section IX of the ASME Code at their local. Participants will be able to apply the rules of Section IX as they pertain to the development of welding procedure specifications and welder qualifications. 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 356 Corrosive Resistant Alloys**1.5 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will develop methods of teaching that focus on the procedures and techniques utilized in welding corrosion resistant alloys such as high nickel alloys. As the piping industry turns to the use of these materials, students train their members to develop the skills necessary to address the industry's welding needs. Students must provide their own personal safety equipment. Limited to United Association Instructor Training program graduates.

UAT 357 TIP TIG Wire Feed Welding Process**1.5 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, designed for UA Welding Instructors, students will learn about and develop methods of teaching the GTAW Hot Wire (HW) Feed TIP TIG welding process. Students will learn the safety, operation, technology and equipment set-up associated with this advanced welding system. Students will learn process variables, system control functions and weld parameter selection for a variety of materials. Enrollment shall be limited to instructors with a minimum of 5 years of experience with the GTAW/GMAW process. Limited to United Association program participants.

UAT 358 Cross Connection Control**3 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6
45 lecture, 3 lab, 0 clinical, 0 other, 48 total contact hours

In this course, students will learn about surveys and inspections of cross connection control to become ASSE Surveyor Certified and instruct apprentices at their local union. 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 in addition to developing strategies for teaching these topics. 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
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will learn to teach 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
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course students will learn methods of teaching advanced air and water analysis. Students should have previous experience in Start, Test and Balance procedures. Topics include: advanced studies of psychometrics, pump and fan design, electrical power analysis, and the use of variable frequency drives. 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
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, students will learn methods of teaching administrative procedures for implementing the Residential Training program in the various local areas. Students will demonstrate maintenance and repair procedures while teaching advanced residential training. They will also learn how recruiting, promoting and training differ from the regular apprentice training programs. 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
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 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 380 Managing Financial Operations of a Training Program (UA 9004)**1.5 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 total contact hours

In this course, the student will be given a comprehensive overview of financial responsibilities associated with operations of a Joint Apprenticeship Training Committee (JATC) training program. Students will discuss financial and legal topics including investments, accounting principles, and financial reporting as well as preventing fraud and responding to potential Department of Labor audits. 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
22.5 lecture, 1.5 lab, 0 clinical, 0 other, 24 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.

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 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 Commercial Video Production**3 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; VID 105 and VID 125; VID 125 may enroll concurrently
45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

In this course students will produce short-formatted projects for business and client-related needs. Productions will cover a range of web content, advertising and promotional projects to service business. By collaborating with actual clients, students write scripts, direct, edit, produce and answer to the needs of professionals from our community. Additional training and instruction will cover working with budgets, timelines/deadlines and soft skills for client-producer relations. The title of this course was previously Web Video.

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 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 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 I**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

In this course students will write, produce, direct and edit at least two 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 275 Documentary Video Production II**3 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; VID 270
30 lecture, 30 lab, 0 clinical, 0 other, 60 total contact hours

In this advanced course, students will work in a production-like environment developing content for an ongoing web-based documentary series. The series will profile people and non-fictional subjects for a segmented web program. Production segments will range from 2 to 20 minutes. Students will produce, write, direct and edit documentaries and projects will include field production work to gather content.

VID 276 Video Graphics I**3 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; VID 125 or ANI 150, minimum grade "C"; VID 125 may enroll concurrently**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 demo reel, create a website and complete a final video thesis project. The demo reel is compiled from previous student work. The demo reel will provide students with a professional portfolio to solicit work in the video production field. Each student will write a script, produce, direct and edit a thesis project. The title of this course was previously Professional Portfolio.

Web Design & Development**WEB****WEB 110 Web Development I****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 learn web page creation using HTML5 and Cascading Style 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 a WEB faculty member. This course contains material previously taught in INP 150.

WEB 113 Web User Experience I**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 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 websites 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, search and site diagramming.

WEB 115 Interface Design I**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 will learn the fundamentals of how to design and structure Web interfaces. Using the basic tools and techniques of interface design, students will learn how to use typography, image and color to create industry standard interfaces. The focus of this class will be on how to design Web deliverables such as basic Web pages and marketing collateral as well as how to prepare digital designs for production. The title of this course was previously Introduction to Interface Design.

WEB 133 Digital Strategy**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 will learn about the technologies and techniques used to increase Web site traffic and reach, as well as how to track user activity and evaluate the impact of Web site changes via analytics. Search engine optimization, content strategy, social media, and conversion rate optimization are all considered. Previous experience with HTML is recommended. This course was previously WEB 233.

WEB 163 User Research and Project Management**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 will focus on the principles and practices of website user research and project management, as digital strategy professionals are often expected to be skilled in both areas. Students will author user surveys and focus group scripts and will consider both waterfall and agile project management methodologies. This course was previously WEB 263.

WEB 210 Web Development II**4 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; INP 150 minimum grade "C" or INP 150 test minimum score 70% or WEB 110 minimum grade "C" or WEB 110 test minimum score 70%
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students learn advanced front-end coding and also are introduced to JavaScript and the DOM. The topics covered include media queries for responsive design, accessible web development using ARIA, CSS pre-processors, and front-end frameworks. Students will write valid, semantically accurate and accessible HTML5 code and will learn the basics of unobtrusive JavaScript. This course contains material previously taught in INP 170.

WEB 213 Web User Experience II**4 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; INP 153 or WEB 113, minimum grade "C"
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students will gain experience with methods for evaluating and improving Web site usability and accessibility. Students will use assistive technology to better understand how users with disabilities experience Web sites. Students will also explore the usability and accessibility of everyday devices. This course contains material previously taught in INP 203.

WEB 215 Interface Design II**4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6; WEB 115 minimum grade "C"
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students focus on Web interface and design techniques that include contemporary layout styles and more complex design challenges. Topics include designing for specific clients and audiences, alternate layout strategies and contemporary content-based design strategies. This class challenges students to incorporate contemporary design aesthetics, technologies and Web styles into digital interfaces. The title of this course was previously Intermediate Interface Design.

WEB 230 Advanced JavaScript**4 credits**

Level I Prerequisites: Academic Reading and Writing Levels of 6
Level II Prerequisites: Need to have working knowledge of HTML5 and CSS and should have prior programming experience.
60 lecture, 0 lab, 0 clinical, 0 other, 60 total contact hours

In this advanced Web programming course, accessible, unobtrusive and standards-compliant coding techniques are stressed. Considerable emphasis is placed on JavaScript fundamentals, Node.js, AJAX, and MVC architecture. Students must be proficient in HTML5 and CSS and should have either successfully completed a basic programming class or have at least one year of prior programming experience.

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 course is designed for non-welding majors. This class does not meet a requirement for welding certificates or degrees. 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

In this course, students are introduced to the soldering and brazing processes on copper tubing and fittings. Students practice 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 course is designed for non-welding majors. This class does not meet a requirement for welding certificates or degrees.

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

In this basic welding class, students are introduced to 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). Students 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.

WAF 106 Welding Print Reading**3 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; Academic Math Level 1; WAF 125 or WAF 126, minimum grade "C"; may enroll concurrently**30 lecture, 30 lab, 0 clinical, 0 other, 60 total contact hours**

In this course, students are introduced to print reading and drafting fundamentals and concepts. Students will learn to recognize and apply key terms, line types, dimensioning and tolerances and the different orthographic views while becoming skilled at interpreting AWS A2.4 standard symbols for welding, brazing and non-destructive examination. The title of this course was previously Blueprint Reading for Welders.

WAF 109 Welding Safety and OSHA Regulations**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 the rights and responsibilities of an entry-level General Industry and Construction personnel along with the responsibilities of an employer. Course topics include hazard recognition, abatement, control and prevention. Several OSHA regulations topics will be covered, such as electrical safety, fall protection, welding, machine guarding, Worker's Compensation Law, power industrial truck operation, personal protection equipment and HAZMAT. Students that complete the course can receive an OSHA-10 certificate in General Industry and Construction along with a certification in power industrial truck operation. The title of this course was previously OSHA General Industry and Construction Site Safety and Regulations.

WAF 110 Ironworker Pre-Apprenticeship Orientation and Safety**2 credits****Level I Prerequisites:** Academic Reading Level 3; Academic Writing Level 2**15 lecture, 45 lab, 0 clinical, 0 other, 60 total contact hours**

In this course, students will be introduced to the history of the Ironworkers Union, basic safety information, terminology and hands-on experience needed to start working as an Ironworker. Areas of study will include personal protective equipment (PPE) use, scaffolding safety, fire watch procedures, OSHA 30, Subpart R, CPR, first aid and power tool safety specific to the Ironworker trade. All the information covered in this course is developed from the Ironworker Orientation Manual. This course is required for the Ironworkers Pre-Apprenticeship Certificate.

WAF 114 Ironworker Pre-Apprenticeship Introduction to Welding**3 credits****Level I Prerequisites:** Academic Reading Level 3; Academic Writing Level 2**15 lecture, 60 lab, 0 clinical, 0 other, 75 total contact hours**

In this course, students will be introduced to Shielded Metal Arc Welding (SMAW), Flux-Cored Arc Welding (FCAW), Oxy-Fuel Gas Welding and Cutting (OFC-W/C), Soldering and Brazing processes and how the processes apply to the Ironworker trade. The student will apply these processes to various joint designs using proper techniques on steel plates and structural shapes. Welding vocabulary, welding theory, safety precautions and safe work practices will be covered. This course contains material previously taught in WAF 115. This course is required for the Ironworkers Pre-Apprenticeship Certificate.

WAF 116 Ironworker Pre-Apprenticeship Shielded Metal Arc Welding**4 credits****Level I Prerequisites:** Academic Reading Level 3; Academic Writing Level 2; WAF 110 and WAF 114, minimum grade "C"**30 lecture, 90 lab, 0 clinical, 0 other, 120 total contact hours**

In this course, students will be introduced to the Shielded Metal Arc Welding (SMAW) and the Carbon Arc Cutting and Gouging (CAC/G) processes and how these processes are applied in the Ironworker trade. Students will learn to apply SMAW to various joint designs on plate and structural shapes in multiple positions and perform CAC/G techniques on steel with the various types of CAG electrodes. Welding vocabulary, welding theory, basic electricity, personal protective equipment, (PPE), equipment troubleshooting, safety precautions and safe work practices will be covered along with an introduction to weld quality. The title of this course was previously Shielded Metal Arc Welding for Ironworkers. This course is required for the Ironworkers Pre-Apprenticeship Certificate.

WAF 117 Ironworker Pre-Apprenticeship Flux Cored Arc Welding**4 credits****Level I Prerequisites:** Academic Reading Level 3; Academic Writing Level 2; WAF 110 and WAF 114, minimum grade "C"
30 lecture, 90 lab, 0 clinical, 0 other, 120 total contact hours

In this course, students will be introduced to the Flux-Cored Arc Welding (FCAW) process and gain the understanding of how this process is applied in the Ironworker trade. Students will learn to apply FCAW to various joint designs, on plate and structural shapes in multiple positions, using self-shielded and gas shielded filler wire. Welding vocabulary, welding theory, basic electricity, personal protective equipment (PPE), equipment troubleshooting, welding symbols, safety precautions and safe work practices will be covered along with discussing the various consumables used in FCAW and their applications. The title of this course was previously Flux Cored Arc Welding for Ironworkers. This course is required for the Ironworkers Pre-Apprenticeship Certificate.

WAF 119 Ironworker Pre-Apprenticeship Rigging and Cranes**2 credits****Level I Prerequisites:** Academic Reading Level 3; Academic Writing Level 2**15 lecture, 45 lab, 0 clinical, 0 other, 60 total contact hours**

In this course, students will be introduced to rigging safety, application of rigging equipment and rigging techniques. Topics covered include but are not limited to: rigging hazards, rigger safety, flagger procedures, appropriate rigging signals, material handling, rigging calculations, rigging hardware, crane equipment and operations. Preparation for the Crosby Level 1 Rigging Certification test is also covered. This course is required for the Ironworkers Pre-Apprenticeship Certificate.

WAF 120 Ironworker Pre-Apprenticeship Print Reading and Contextualized Math**2 credits****Level I Prerequisites:** Academic Reading Level 3; Academic Writing Level 2**15 lecture, 45 lab, 0 clinical, 0 other, 60 total contact hours**

In this course, the pre-apprentice is provided with training in various line types and symbols used in construction drawings such as steel frame construction, architectural, engineering and specialty drawings used by the ironworker trade. The math portion of this course will present relevant math formulas, math problems, measurements with specified layout tools. Basic fraction problem-solving and conversions required in the ironworker trades will be reviewed. This course is required for the Ironworkers Pre-Apprenticeship Certificate.

WAF 125 Introduction to Welding Processes I**2 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; WAF 109 minimum grade "C", may enroll concurrently**15 lecture, 45 lab, 0 clinical, 0 other, 60 total contact hours**

In this course, students are given an introduction to the following welding processes: Oxy-Fuel Welding (OFW), Oxy-Fuel Cutting (OFC), Brazing, Gas Tungsten Arc Welding (GTAW) on carbon steel, aluminum, stainless steel plate and sheet metal. This will include the Flat (1G/F) and horizontal (2G/F) positions. Surfacing (Pad welding) will also be performed in the GTAW process.

WAF 126 Introduction to Welding Processes II**2 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; WAF 109 minimum grade "C", may enroll concurrently**15 lecture, 45 lab, 0 clinical, 0 other, 60 total contact hours**

In this course, students are introduced to the following welding processes: Shielded Metal Arc Welding (SMAW), Gas Metal Arc Welding (GMAW) and Flux Core Arc Welding (FCAW). Multiple weld joints are covered in the flat (1F/G) and horizontal (2F/G) positions on plate and sheet metal.

WAF 130 Shielded Metal Arc Welding (SMAW)**4 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; Academic Math Level 1; WAF 109 minimum grade "C", may enroll concurrently; WAF 126 minimum grade "C"**30 lecture, 90 lab, 0 clinical, 0 other, 120 total contact hours**

In this course, which expands on the Shielded Metal Arc Welding (SMAW) process, students are introduced to all position welding on various joint designs. Other topics in the course include AWS electrode identification, classification and proper weld positioning. Students will apply techniques taught in the course when welding structural shapes and pipe. This course contains material previously taught in WAF 112.

WAF 131 Thermal Cutting, Gouging and Weld Repair**3 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; WAF 109 minimum grade "C"**30 lecture, 30 lab, 0 clinical, 0 other, 60 total contact hours**

In this course, students are introduced to the following cutting and gouging processes: Oxy-fuel cutting (OFC), Gouging, Plasma Arc Cutting (PAC), Plasma Arc Gouging, Carbon Arc Cutting (CAC), Carbon Arc Gouging, Oxygen Lance Cutting and Gouging. These processes will be applied to plate, sheet metal and pipe.

WAF 139 Basic Metal Fabrication**3 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; Academic Math Level 1; WAF 105 and WAF 106, minimum grade "C"; or WAF 125 and WAF 126, minimum grade "C"**30 lecture, 30 lab, 0 clinical, 0 other, 60 total contact hours**

In this course, students are introduced to the principles and practices of metal fabrication and the proper and safe use of various pieces of metal fabricating equipment. Students will apply fabrication techniques of drafting and print reading, layout, assembly, tacking and welding to manufacture basic metal projects. This course contains material previously taught in WAF 227.

WAF 140 Inspection and Testing**3 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; Academic Math Level 1; WAF 109, WAF 125 and WAF 126, minimum grade "C"**30 lecture, 30 lab, 0 clinical, 0 other, 60 total contact hours**

In this course, students are introduced to the most common types of weld inspection and testing methods. Destructive testing methods include bend tests, tensile pulls, Charpy V notch and macro etch tests with non-destructive methods focusing on visual, dye penetrant, ultrasonic, magnetic particle and radiographic testing. Welding code acceptance criteria will be interpreted and applied to testing methods where applicable.

WAF 150 Automated Welding and Cutting**3 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; Academic Math Level 1; WAF 140, WAF 232 and NCT 120, minimum grade "C"**30 lecture, 30 lab, 0 clinical, 0 other, 60 total contact hours**

In this course, students are introduced to basic robotic welding and cutting. Safety, set-up, programming and industry applications are covered. Students will be exposed to five- and six-axis robotic applications of gas metal arc welding (GMAW), laser, spot and resistance welding as well as plasma, laser and water jet cutting methods.

WAF 174 WAF 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.

WAF 210 Welding Metallurgy**3 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; Academic Math Level 2; WAF 140 and WAF 232, minimum grade "C"**45 lecture, 15 lab, 0 clinical, 0 other, 60 total contact hours**

In this course, students will be introduced to grain structure, atomic structure and phase transformations. They will recognize and illustrate the various aspects of extractive, mechanical and physical metallurgy including the theory and practice of metal identification, selection, processing, fabrication, conditioning and testing of ferrous and non-ferrous materials. Heat-treating of various common industry materials will be discussed and students will analyze the root cause of weld failure and identify solutions.

WAF 230 Advanced Shielded Metal Arc Welding (SMAW)**4 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; Academic Math Level 1; WAF 130 minimum grade "C"**30 lecture, 90 lab, 0 clinical, 0 other, 120 total contact hours**

In this course, students further develop their Shielded Metal Arc Welding (SMAW) skills by learning the American Welding Society (AWS) codes and standards and applying them to welds being performed. Students will perform sheet, plate, "C" channel and "H" beam welds in all positions as well as pipe welding in the 5F/G and 6F/G positions using multiple electrodes. The title of this course was previously Welding IV Advanced ARC (SMAW) and contains material previously taught in WAF 124.

WAF 231 Gas Tungsten Arc Welding (GTAW)**4 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; Academic Math Level 1; WAF 125 minimum grade "C"**30 lecture, 90 lab, 0 clinical, 0 other, 120 total contact hours**

In this course, students further enhance their Gas Tungsten Arc Welding (GTAW) skills by performing advanced welding techniques most commonly used in the aerospace, manufacturing and automotive industries. Materials, such as, carbon steel, aluminum, stainless steel, copper and cast iron will be used. Multiple passes will be required using positions such as 2F/G, 3F/G, 4F/G, 5F/G, 6F/G on sheet, plate and pipe. Students will apply filler metal classification and specifications, codes and standards set forth by the American Welding Society (AWS). This course contains material previously taught in WAF 215.

WAF 232 Semi-Automatic Welding Processes**4 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; Academic Math Level 1; WAF 126 minimum grade "C"**30 lecture, 90 lab, 0 clinical, 0 other, 120 total contact hours**

In this course, students enhance their welding skills in the Gas Metal Arc Welding (GMAW), Flux Cored Arc Welding (FCAW) and Metal Cored Arc Welding (MCAW) processes by performing advanced welding techniques most commonly used in the manufacturing, automotive and construction industries. Other topics include filler metal classification and specifications, codes and standards set forth by the American Welding Society (AWS). This course contains material previously taught in WAF 288.

WAF 233 Submerged Arc and Flux Core Arc Welding**3 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; Academic Math Level 2; WAF 232 minimum grade "C"
30 lecture, 30 lab, 0 clinical, 0 other, 60 total contact hours

In this course, students are introduced to the Submerged Arc Welding (SAW) and Flux Core Arc Welding (FCAW) processes with automated and semi-automated wire feed systems. Safety, set-up, programming, industry applications as well as AC/DC polarities, waveform technology and applications on longitudinal (plate) and circumferential (pipe) are demonstrated.

WAF 239 Advanced Metal Fabrication**3 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; Academic Math Level 2; WAF 139, WAF 210, WAF 230, WAF 231 and WAF 232, minimum grade "C"; WAF 210 may enroll concurrently
15 lecture, 60 lab, 0 clinical, 0 other, 75 total contact hours

In this capstone course, students will utilize various skills they have learned throughout the program. Students will be required to utilize their print reading skills to interpret a blueprint, layout a project, cut material, bend, drill, mill, assemble and weld projects in accordance with specifications on the blueprint. Group and individual projects may be required.

WAF 290 Advanced Training and Weld Certification**3 credits****Level I Prerequisites:** Academic Reading and Writing Levels of 6; Academic Math Level 3; WAF 140 minimum grade "B", may enroll concurrently; WAF 230, WAF 231 or WAF 232, minimum grade "B"
30 lecture, 45 lab, 0 clinical, 0 other, 75 total contact hours

In this course, students will improve their command of welding processes, advance their welding skills and perform welds to the high standards established by the American Welding Society (AWS). The theory and skills needed for certification in specific welding vocations will be covered. Visual inspection of weld discontinuities along with the requirements and duties of the certified welding inspector are discussed. Successful students will perform welding tasks that meet AWS and ASME standards for an industry certification.

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.