WCC General Education Requirements
Effective Fall 2018

Associate degree programs were updated to meet the revised WCC general education requirements below.

Course Distribution Requirements

Associate degree students must complete courses from each of six General Education content areas. The requirements vary, depending on which degree is being earned. The number of general education credit hours required for each degree is as follows.

	AA	AS	AAS
Writing/Composition	3-4 credits	3-4 credits	3-4 credits
2nd Writing/Composition or Communication	3-4 credits	3 credits	3 credits
Mathematics	3-4 credits	3-4 credits	3-4 credits
Natural Sciences [1]	7-8 credits	7-8 credits	3-4 credits
Social & Behavioral Science [2]	6 credits	6 credits	3 credits
Arts and Humanities [3]	6 credits	6 credits	3 credits
General Education Electives to reach 30 credits	0-2 credits	0-2 credits	N/A
Minimum	30 credits	30 credits	18 credits

[1] Two courses in Natural Science including one with laboratory experience (from two disciplines)
[2] From two disciplines
[3] From two disciplines

Program Information Report

Information Systems: Programming in C++ (ASISPC)
Associate in Science Degree
Program Effective Term: **Fall 2018**

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

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/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
CPS 171	Introduction to Programming with C++	4
ENG 111	Composition I	4
	Speech/Comp. Elective(s) 2	3

Second Semester		(18 credits)
CIS 121	Linux/UNIX I: Fundamentals	4
CPS 271	Object Features of C++	4
	MTH 176 or higher 4 credit math course	4
	Arts/Human. Elective(s) 1	3
	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
	Nat. Sci. Lab Elective(s)	3
	Soc. Sci. Elective(s) 2	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.

WASHTENAW COMMUNITY COLLEGE
GENERAL EDUCATION REVISION PROGRAM CHANGE FORM
FOR AA AND AS PROGRAMS 2018-2019
Due December 8, 2017

Program Code: A SISPC	**Program Name:** Information Systems: Programm
Division Code: BCT	**Department:** CIS

This form is to be used only for General Education Revision Program Changes for Associate in Arts (AA) and Associate in Science (AS) programs. Any other program changes should be submitted separately using a standard Program Change Form.

Directions:
1. Review each general education area under **Requested Changes** below and respond as needed.
2. Attach the semester program layout showing the current program listing from the WCC catalog.
   a. Indicate any changes to be made on the semester layout.
   b. Draw a line through any courses that should be removed on the semester layout.
   c. Write in any courses that need to be added on the semester layout.
3. Submit this form and semester program layout to the Office of Curriculum and Assessment (SC 257).

Current General Education Requirements AA and AS		Revised General Education Requirements 2018-2019 AA and AS	
Writing	6 - 7 credits	English Composition	3 - 4 credits
Speech	3 credits	2nd Course in English Composition or one course in Communication	3 - 4 credits
Mathematics	3 - 4 credits	Mathematics	3 - 4 credits
Natural Sciences	3 - 4 credits	Natural Sciences from 2 disciplines including one lab course	7 - 9 credits
Social & Behavioral Sciences	6 credits	Social & Behavioral Sciences from 2 disciplines	6 credits
Arts & Humanities	6 credits	Arts & Humanities from 2 disciplines	6 credits
Critical Thinking	0 credits	Elective Credits to reach a minimum of 30 credit hours	0 - 3 credits
Computer & Information Literacy	3 credits		
Total	30 - 33 credits	Total	30 credits

Please review each General Education Area in the chart below, and record the needed changes in the chart and on the attached semester layout.

REQUESTED CHANGES
General Education Area
English Composition – The requirement for one writing/English composition course remains the same. No changes will be made unless specifically requested below. (Use Writing Elective or ENG 111)
Optional Change: *none*
2nd Course in English Composition or one course in Communication WCC previously required both a second composition/writing course and a communication course. Your options are:
1. Allow students to select any course that meets composition/writing or communication (*recommended*).
2. Require students to take a specific composition course (identify course below and on semester layout).
3. Require students to take a specific communication course (identify course below and on semester layout).
Requested Change: *change COM 225 to Speech elective*
2nd Course in English Composition or one course in Communication Credit Hours

Because of this change, an extra 3 - 4 credit hours may be available in the program. Please specify how you would like to use those credit hours. Your options are:

1. Reduce the number of credit hours if the program total is over 60 (recommended).
2. Replace the course with elective credits as needed to reach a minimum of 60 credit hours.
3. Add a specific program-related course (please add the course in the semester it should be taken on the semester layout).

Requested Change: Drop ENG 226   Add CPS 298   Prof Team Prog

Mathematics – The requirement for one mathematics course remains the same. However, the courses that meet the MTA requirement have changed slightly. MTH 148, 149 and 167 do not meet the general education requirement for AA or AS degrees. Please identify an alternate course or list "Math elective".

Optional Change: none

Natural Sciences from 2 disciplines including one lab course
WCC previously required one natural science course. Your options are:

1. No change needed – a second natural science course is already included in my program.
2. Add a second natural science course in the semester shown on the semester layout attached. Unless specific courses are required, include one course identified as a lab science course.

Requested Change: Change optional wording

Social & Behavioral Sciences from 2 disciplines – The requirement for two social and behavioral science courses remains the same. No changes will be made unless specifically requested below.

Optional Change: none

Arts & Humanities from 2 disciplines – The requirement for two arts and humanities courses remains the same. No changes will be made unless specifically requested below. (Note: A department can designate a COM course as a requirement here. The same course cannot be counted in two areas.)

Optional Change: none

Computer and Information Literacy
The requirement for computer and information literacy has been removed. Your options are:

1. Continue to require a specific computer course. If a specific course is required in your program, we will leave it there. If you previously used "Computer and Information Literacy Course," you will need to specify either a specific course or a list of courses from which to choose.
2. Remove the computer and information literacy course if the program will still meet the minimum of 60 credit hours.
3. Remove the computer and information literacy course and replace the course with elective or other credits as needed to meet the minimum of 60 credit hours.

Required Change: Drop, replace w/ Computer Course

Elective Credits to reach a minimum of 30 credit hours – A course titled "General Education Credit(s) to Reach a Minimum of 30 Credit Hours" will be created and then added as needed to the program.

Reviewer	Print Name	Signature	Date
Initiator	Phil Geyer		12-8-17
Department Chair	Phil Geyer		12-8-17
Division Dean/ Administrator	Eva Samulski	Eva Samulski	12-12-17
Vice President for Instruction			1/9/18

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               1/22/18   1/22/18

PROGRAM CHANGE OR DISCONTINUATION FORM

Program Code: A S I S Pc

Program Name: Information Systems: Programming in C++

Effective Term: Winter 2014

Division Code: BCT   **Department:** Computer Instruction Dept. (CIS/CPS/etc.)

Directions:

1. Attach the current program listing from the WCC catalog or Web site and indicate any changes to be made.

2. Draw lines through any text that should be deleted and write in additions. Extensive narrative changes can be included on a separate sheet.

3. Check the boxes below for each type of change being proposed. Changes to courses, discontinuing a course, or adding new courses as part of the proposed program change, must be approved separately using a Master Syllabus form, but should be submitted at the same time as the program change form.

Requested Changes:

☐ Review
☐ Remove course(s): _____
☒ Add course(s): CPS255 - IOS/Objective C – Apple Ipad/Iphone____
☐ Program title (title was _____)
☐ Description
☐ Type of award
☐ Advisors
☐ Articulation information

☐ Program admission requirements
☐ Continuing eligibility requirements
☐ Program outcomes
☐ Accreditation information
☐ Discontinuation (attach program discontinuation plan that includes transition of students and timetable for phasing out courses)
☐ Other_____

Show all changes on the <u>attached page from the catalog</u>.

Rationale for proposed changes or discontinuation:

Adding CPS255 (IOS/Objective C – Apple Ipad/Iphone) class to the program.

Financial/staffing/equipment/space implications:

List departments that have been consulted regarding their use of this program.

Signatures:

Reviewer	Print Name	Signature	Date
Initiator	Clarence Hasselbach	*[signature]*	2/19/2013
Department Chair	John Trame	*[signature]*	2/19/2013
Division Dean/Administrator	Rosemary Wilson	*[signature]*	2/20/13
Vice President for Instruction	William Abernethy	*[signature]*	3/22/13
President	N/A		

Do not write in shaded area.   Entered in: Banner_____ C&A Database 2/20/13 Log File 2/20/13 Board Approval_____

Please submit completed form to the Office of Curriculum and Assessment and email an electronic copy to sjohn@wccnet.edu for posting on the website.

logged 2/20/13 sj/

Information Systems: Programming in C++ (ASISPC)
Associate in Science Degree
Program Effective Term: Fall 2013

This program prepares students to transfer to complete a bachelor's degree in Business Administration with a major in Computer Information Systems. Undergraduates and graduates of CIS programs are prepared to create and maintain information systems for organizations, manage information systems projects, and develop strategies for effective use of enterprise information resources.

Articulation:
Eastern Michigan University, several BS degrees.

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

Program Admission Requirements:
Students need an Academic Math Level of 4 to enroll in MTH 176.

COM 225	Intercultural Communication*	3
CPS 171	Introduction to Programming with C++	4
ENG 111	Composition I	4
	Computer Lit. Elective(s)	3

CIS 121	Linux/UNIX I: Fundamentals	3
CPS 271	Object Features of C++	4
ENG 226	Composition II	3
	MTH 176 or higher 4 credit math course	4
	Arts/Human. 1 Elective(s)	3

CPS 276	Web Programming Using Apache, MySQL, and PHP	4
	Nat. Sci. Elective(s)**	4
	Soc. Sci. 1 Elective(s)***	3
	Electives Students must complete 100-level or above transferrable courses to reach a minimum of 60 credits. Possible CIS/CPS electives include: CIS 282, CPS 161, CPS 251, CPS 255, CPS 261, CPS 278	4

CPS 272	Data Structures with C++	4
	Arts/Human. 2 Elective(s)	3
	Soc. Sci. 2 Elective(s)***	3
	Soc. Sci. 3 Elective(s)***	3
	Electives Students must complete 100-level or above transferrable courses to reach a minimum of 60 credits. Possible CIS/CPS electives include: CIS 282, CPS 161, CPS 251, CPS 255, CPS 261, CPS 278	4

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

Notes:

*Satisfies EMU's Diverse World Requirement
**Students transferring to a four-year institution should choose a lab-based, MACRAO-approved science course.
See an advisor to choose courses that meet the requirements of the program to which you are transferring.
***Choose three courses from at least two disciplines.

This course sequencing aligns with students starting in the Fall semester. Students starting the Winter semester should switch the order in which they take CPS 272 and CPS 276.

Information Systems: Programming in C++ (ASISPC)

Associate in Science Degree   2010 - 2011   2011 - 2012   2012 - 2013

Description

This program prepares students to transfer to complete a bachelor's degree in Business Administration with a major in Computer Information Systems. Undergraduates and graduates of CIS programs are prepared to create and maintain information systems for organizations, manage information systems projects, and develop strategies for effective use of enterprise information resources.

Articulation

Eastern Michigan University, several BS degrees.

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

Admissions Requirements

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

Contact Information

Division: Business/Computer Technologies
Department: Computer Instruction Dept
Advisors: Philip Geyer, Clarence Hasselbach, Khaled Mansour

Requirements

First Semester

Class	Title	Credits
Elective(s)	Computer and Information Literacy	3
COM 225	Intercultural Communication *	3
CPS 171	Introduction to Programming with C++	4
ENG 111	Composition I	4
Total		**14**

Second Semester

Class	Title	Credits
Elective(s)	Arts and Humanities 1	3
	MTH 176 or higher 4 credit math course	4
CIS 121	Linux/UNIX I: Fundamentals	3
CPS 271	Object Features of C++	4
ENG 226	Composition II	3
Total		**17**

Third Semester

Class	Title	Credits
CPS 276	Web Programming Using Apache, MySQL, and PHP	4
Elective(s)	Natural Sciences **	4
Elective(s)	Social and Behavioral Science 1 ***	3
	Electives Students must complete 100-level or above transferrable courses to reach a minimum of 60 credits. Possible CIS/CPS electives include: CIS 282, CPS 161, CPS 251, CPS 261, CPS 278	4
Total		**15**

add to the 1st of electives CPS 255

Fourth Semester

Class	Title	Credits
CPS 272	Data Structures with C++	4
Elective(s)	Arts and Humanities 2	3
Elective(s)	Social and Behavioral Science 2 ***	3
Elective(s)	Social and Behavioral Science 3 ***	3
	Electives Students must complete 100-level or above transferrable courses to reach a minimum of 60 credits. Possible CIS/CPS electives include: CIS 282, CPS 161, CPS 251, CPS 261, CPS 278	4
Total		**17**

Add to the list of electives CPS 255

Total Credits Required: 63

Footnotes

*Satisfies EMU's Diverse World Requirement
**Students transferring to a four-year institution should choose a lab-based, MACRAO-approved science course.
See an advisor to choose courses that meet the requirements of the program to which you are transferring.
***Choose three courses from at least two disciplines.

This course sequencing aligns with students starting in the Fall semester. Students starting the Winter semester should switch the order in which they take CPS 272 and CPS 276.

PROGRAM CHANGE OR DISCONTINUATION FORM

Program Code: ASISPC	Program Name: Information Systems: Programming in C++	Effective Term: 201209
Division Code: BCTD	Department: CIS	

Directions:

1. Attach the current program listing from the WCC catalog or Web site and indicate any changes to be made.

2. Draw lines through any text that should be deleted and write in additions. Extensive narrative changes can be included on a separate sheet.

3. Check the boxes below for each type of change being proposed. Changes to courses, discontinuing a course, or adding new courses as part of the proposed program change, must be approved separately using a Master Syllabus form, but should be submitted at the same time as the program change form.

Requested Changes:

☐ Review
☒ Remove course(s): See program edits, attached.
☒ Add course(s): See program edits, attached.
☐ Program title (title was _____)
☐ Description
☐ Type of award
☐ Advisors
☐ Articulation information

☐ Program admission requirements
☐ Continuing eligibility requirements
☐ Program outcomes
☐ Accreditation information
☐ Discontinuation (attach program discontinuation plan that includes transition of students and timetable for phasing out courses)
☒ Other: Articulation notes.

Show all changes on the attached page from the catalog.

Rationale for proposed changes or discontinuation:

General education requirements for the ASISPC Programming in C++ degree have been changed to be consistent with the general education requirements for the ASCPJ Programming in Java degree. Required support courses have been eliminated in favor of electives that allow students more course options when tailoring this program to the requirements of different four year programs in computer information systems and computer science.

Financial/staffing/equipment/space implications:

None

List departments that have been consulted regarding their use of this program.

NA

Signatures:

Reviewer	Print Name	Signature	Date
Initiator	Clarence Hasselbach	*Clarence Hasselbach*	2/15/12
Department Chair	Clarence Hasselbach	*Clarence Hasselbach*	2/15/12
Division Dean/Administrator	Rosemary Wilson	*Rosemary Wilson*	2/15/12
Vice President for Instruction	Stuart Blacklaw	*Stuart Blacklaw*	4/5/12
President	Rose Bellanca		

Do not write in shaded area. Entered in: Banner_____ C&A Database_____ Log File_____ Board Approval_____

Please submit completed form to the Office of Curriculum and Assessment and email an electronic copy to sjohn@wccnet.edu for posting on the website.

Program Information Report

School of Information Technology

The School of Information Technology gathers the diverse areas that make up the computer technology of today. From basic programming languages to systems development through networking, these programs provide the core of information technology. Develop skills in computer networking or programming in the growing field of applied information technology.

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

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

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

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

Programming

Learn the foundation of computer programming or specialize in a programming language through these programs.

Information Systems: Programming in C++ (ASISPC)
Associate in Science Degree
Program Effective Term: Fall 2012

This program prepares students to transfer to complete a bachelor's degree in Business Administration with a major in Computer Information Systems. Undergraduates and graduates of CIS programs are prepared to create and maintain information systems for organizations, manage information systems projects, and develop strategies for effective use of enterprise information resources.

Articulation:
Eastern Michigan University, several BS degrees.

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

Program Admission Requirements:
Students need an Academic Math Level of 4 to enroll in MTH 176.

First Semester		(14 credits)
COM 225	Intercultural Communication*	3
CPS 171	Introduction to Programming with C++	4
ENG 111	Composition I	4
	Computer Lit. Elective(s)	3

Second Semester		(17 credits)
CIS 121	Linux/UNIX I: Fundamentals	3
CPS 271	Object Features of C++	4
ENG 226	Composition II	3
	MTH 176 or higher 4 credit math course	4
	Arts/Human. 1 Elective(s)	3

Third Semester		(15 credits)
CPS 276	Web Programming Using Apache, MySQL, and PHP	4
	Nat. Sci. Elective(s)**	4
	Soc. Sci. 1 Elective(s)	3
	Electives Students must complete 100-level or above transferrable courses to reach a minimum of 60 credits. Possible CIS/CPS electives include: CIS 282, CPS 161, CPS 251, CPS 261, CPS 278	4

Fourth Semester		(17 credits)
CPS 272	Data Structures with C++	4
	Arts/Human. 2 Elective(s)	3
	Soc. Sci. 2 Elective(s)	3

Soc. Sci. 3 Elective(s)	3
Electives Students must complete 100-level or above transferrable courses to reach a minimum of 60 credits. Possible CIS/CPS electives include: CIS 282, CPS 161, CPS 251, CPS 261, CPS 278	4

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

Notes:

*Satisfies EMU's Diverse World Requirement
**Students transferring to a four-year institution should choose a lab-based, MACRAO-approved science course.
See an advisor to choose courses that meet the requirements of the program to which you are transferring.

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

Transfer and University Parallel Programs

If your goal is to continue your education toward a baccalaureate degree, then transfer and university parallel programs is the track for you. Complete the first two years of study in a supportive environment with small classes and personal attention.

Business (AABAS)
Computer Science: Programming in Java (See Information Technology)
Criminal Justice (AACJ)
Education, Early Childhood (AAECE)
Education, Elementary (AAELEM)
Education, Secondary (AASECO)
Environmental Science (ASENVS)
Exercise Science (ASESCI)
General Studies in Math and Natural Sciences (ASGSMS)
Human Services (AAHUST)
Information Systems: Programming in C++ (See Information Technology)
Internet Professional (AAINP)
Liberal Arts Transfer (AALAT)
Math and Science (ASMSAS)
1. Pre-Medicine Concentration (BMED) or (CMED)
2. Computer Science Concentration (COMS)
3. Mathematics Concentration (MATH)
4. Physics/Pre-Engineering Concentration (PHYS)

Before beginning any transfer program, a student should consult with an academic advisor or counselor to obtain a program articulation agreement, or a transfer guide. Early in the program, the student should contact an undergraduate advisor at the transfer college for specific admission and curriculum requirements and, if available, an unofficial transfer-credit evaluation.

Copies of articulation agreements and transfer guides are available in the Counseling Office on the second floor of the Student Center Building. Computers with access to the Internet Web sites of four-year colleges and universities are also available there.

Computer Science and Information Systems

Interested in a bachelor's degree in computer science or (business) information systems? This area provides the foundation you need to be successful.

Program Information Report

Information Systems: Programming in C++ (ASISPC)
Associate in Science Degree
Program Effective Term:　　Fall 2012

This program prepares students to transfer to complete a bachelor's degree in Business Administration with a major in Computer Information Systems. Undergraduates and graduates of CIS programs are prepared to create and maintain information systems for organizations, manage information systems projects, and develop strategies for effective use of enterprise information resources.

Articulation:
Eastern Michigan University, several BS degrees.

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

Program Admission Requirements:
Students need an Academic Math Level of 4 to enroll in MTH 176.

First Semester		**(14 credits)**
COM 225	Intercultural Communication*	3
CPS 171	Introduction to Programming with C++	4
ENG 111	Composition I	4
	Computer Lit. Elective(s)	3

Second Semester		**(17 credits)**
CIS 121	Linux/UNIX I: Fundamentals	3
CPS 271	Object Features of C++	4
ENG 226	Composition II	3
	MTH 176 or higher 4 credit math course	4
	Arts/Human. 1 Elective(s)	3

Third Semester		**(15 credits)**
CPS 276	Web Programming Using Apache, MySQL, and PHP	4
	Nat. Sci. Elective(s)**	4
	Soc. Sci. 1 Elective(s)	3
	Electives Students must complete 100-level or above transferrable courses to reach a minimum of 60 credits. Possible CIS/CPS electives include: CIS 282, CPS 161, CPS 251, CPS 261, CPS 278	4

Fourth Semester		**(17 credits)**
CPS 272	Data Structures with C++	4
	Arts/Human. 2 Elective(s)	3
	Soc. Sci. 2 Elective(s)	3
	Soc. Sci. 3 Elective(s)	3
	Electives Students must complete 100-level or above transferrable courses to reach a minimum of 60 credits. Possible CIS/CPS electives include: CIS 282, CPS 161, CPS 251, CPS 261, CPS 278	4

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

Notes:

Satisfies EMU's Diverse World Requirement
***Students transferring to a four-year institution should choose a lab-based, MACRAO-approved science course.*
See an advisor to choose courses that meet the requirements of the program to which you are transferring.

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 CHANGE OR DISCONTINUATION FORM

Program Code: ASISPC	Program Name: Information Systems/ C++ Programming	Effective Term: 201109

Division Code: BCT   **Department:** CISD

Directions:

1. Attach the current program listing from the WCC catalog or Web site and indicate any changes to be made.

2. Draw lines through any text that should be deleted and write in additions. Extensive narrative changes can be included on a separate sheet.

3. Check the boxes below for each type of change being proposed. Changes to courses, discontinuing a course, or adding new courses as part of the proposed program change, must be approved separately using a Master Syllabus form, but should be submitted at the same time as the program change form.

Requested Changes:

☐ Review
☒ Remove course(s): BMG 106
☒ Add course(s): CPS 276 MySQL/PHP Programming
☐ Program title (title was _____)
☐ Description
☐ Type of award
☐ Advisors
☐ Articulation information

☐ Program admission requirements
☐ Continuing eligibility requirements
☐ Program outcomes
☐ Accreditation information
☐ Discontinuation (attach program discontinuation plan that includes transition of students and timetable for phasing out courses)
☐ Other _____

Show all changes on the <u>attached page from the catalog</u>.

Rationale for proposed changes or discontinuation:

BMG 106 is being discontinued by the BMG Department. CPS 276 MySQL/PHP is being substituted into the program in lieu of BMG 106. CPS 276 transfers into the CIS Program at the Eastern Michigan University College of Business at IS 247.

Financial/staffing/equipment/space implications:

None

List departments that have been consulted regarding their use of this program.

CISD, BMGD

Signatures:

Reviewer	Print Name	Signature	Date
Initiator	Neil Gudsen		1-28-2011
Department Chair	Clarence Hasselbach		1-28-2011
Division Dean/Administrator	Rosemary Wilson		1/31/11
Vice President for Instruction	Stuart Blacklaw		2/21/11
President	Larry Whitworth		

Do not write in shaded area. Entered in: Banner_____ C&A Database_____ Log File 2/7/11 Board Approval _____

Please submit completed form to the Office of Curriculum and Assessment and email an electronic copy to sjohn@wccnet.edu for posting on the website.

Office of Curriculum & Assessment
logged 2/7/11 JG

Program Information Report

School of Information Technology

The School of Information Technology gathers the diverse areas that make up the computer technology of today. From basic programming languages to systems development through networking, these programs provide the core of information technology. Develop skills in computer security or data recovery analysis, the growing field of applied information technology is waiting for you.

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

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

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

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

Programming

Learn the foundation of computer programming or specialize in a programming language through these programs.

Information Systems: Programming in C++ (ASISPC)
Associate in Science Degree
Program Effective Term:　　Fall 2011

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:
Articulation
Eastern Michigan University, several BS degrees.

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

Program Admission Requirements:
Students need an Academic Math Level of 4 to enroll in MTH 181.

General Education Requirements		(36 credits)
ENG 111 and	Composition I	4
ENG 226	Composition II	3
Speech	Elective(s)*	3
MTH 181	Mathematical Analysis I**	4
Nat. Sci.	Elective(s)***	4
ECO 211 and	Principles of Economics I	3
ECO 222	Principles of Economics II	3
Soc. Sci.	Elective(s)***	3
Arts/Human.	Elective(s)****	6
CIS 110	Introduction to Computer Information Systems	3

Major/Area Requirements		(19 credits)
CIS 121	Linux/UNIX I: Fundamentals	3
CPS 171	Introduction to Programming with C++	4
CPS 271	Object Features of C++	4
CPS 272	Data Structures with C++	4
CPS 276	Web Programming Using Apache, MySQL, and PHP	4

Required Support Courses		(6 credits)
BMG 140	Introduction to Business	3
BMG 200	Human Relations in Business	3

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

Notes:

*See the EMU Diverse World Requirement list.
**MTH 181 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 a four-year institution: choose a lab-based, MACRAO-approved natural science course; choose a social science elective in a discipline other than ECO. See the MACRAO list in the WCC Bulletin for a list of choices.
****PHL 205 or PHL 250 is strongly recommended.

Students intending to transfer into the EMU College of Business may want to take BMG 111 in addition to the courses required in this program. BMG 111 will transfer to the EMU College of Business as LAW 293.

Washtenaw Community College.
Certificates and Degrees.
http://www4.wccnet.edu/academicinfo/creditofferings/programs/degree.php?code=ASISPC

Return to web format »

Information Systems: Programming in C++ (ASISPC)
Associate in Science Degree

Program requirements shown below are for catalog year: 2010 - 2011 · | Change Year |

Description:
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.

Contact Information:
Division: Business and Computer Technologies
School: Transfer and University Parallel Programs
Department: Computer Instruction
Advisors: Philip Geyer, Clarence Hasselbach, Khaled Mansour

Articulation:
Articulation
Eastern Michigan University, several BS degrees.

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

Admission Requirements:
Students need an Academic Math Level of 4 to enroll in MTH 181.

General Education Requirements			(36 Credits)
ENG 111 and		Composition I	4
ENG 226		Composition II	3
Speech	*	Elective(s)	3
MTH 181	**	Mathematical Analysis I	4
Nat. Sci.	***	Elective(s)	4
ECO 211 and		Principles of Economics I	3
ECO 222		Principles of Economics II	3
Soc. Sci.	***	Elective(s)	3
Arts/Hum.	****	Elective(s)	6
CIS 110		Introduction to Computer Information Systems	3

19

Major/Area Requirements		(1̶5̶ Credits)
CIS 121	Linux/UNIX I: Fundamentals	3
CPS 171	Introduction to Programming with C++	4
CPS 271	Object Features of C++	4
CPS 272	Data Structures with C++	4

Required Support Courses		6̶ ̶8̶ Credits)
BMG 106	Legal Basics in Business	3
CPS 276	WEB PROGRAMMING WITH MYSQL & PHP	4

| BMG 140 | Introduction to Business | 3 |
| BMG 200 | Human Relations in Business | 3 |

Minimum Credits Required for the Program: ~~60~~ 61 **Credits**

Footnotes:
*See the EMU Diverse World Requirement list.
**MTH 181 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 a four-year institution: choose a lab-based, MACRAO-approved natural science course; choose a social science elective in a discipline other than ECO. See the MACRAO list in the WCC Bulletin for a list of choices.
****PHL 205 or PHL 250 are strongly recommended.

~~***** PHL 111 is Highly Recommended also~~

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For official information, see an Advisor.

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STUDENTS INTENDING TO TRANSFER INTO THE EMU COLLEGE OF BUSINESS MAY WISH TO TAKE BMG 111 IN ADDITION TO THE COURSES REQUIRED IN THIS PROGRAM. BMG 111 WILL TRANSFER TO THE EMU C.O.B. AS LAW 293.

2/15/11 CC mtg.
CPS 276 should be added under major area requirents

PROGRAM CHANGE OR DISCONTINUATION FORM

Program Code: ASIST **Program Name: Information Systems: Programming in C++**

Effective Term: Immediately

Division Code: BCT

Department: CISD

Directions:

1. Attach the current program listing from the WCC catalog or Web site and indicate any changes to be made.

2. Draw lines through any text that should be deleted and write in additions. Extensive narrative changes can be included on a separate sheet.

3. Check the boxes below for each type of change being proposed. Changes to courses, discontinuing a course, or adding new courses as part of the proposed program change, must be approved separately using a Master Syllabus form, but should be submitted at the same time as the program change form.

Requested Changes:

- [ ] Review
- [ ] Remove course(s): _____
- [ ] Add course(s): _____
- [x] Program title (title was <u>Information Systems Transfer</u>)
- [x] Description
- [ ] Type of award
- [ ] Advisors
- [ ] Articulation information

- [ ] Program admission requirements
- [ ] Continuing eligibility requirements
- [ ] Program outcomes
- [ ] Accreditation information
- [ ] Discontinuation (attach program discontinuation plan that includes transition of students and timetable for phasing out courses)
- [ ] Other_____

Show all changes on the <u>attached page from the catalog</u>.

Rationale for proposed changes or discontinuation:

To facilitate search engines looking for our computer programming degrees.

Financial/staffing/equipment/space implications:

None

List departments that have been consulted regarding their use of this program.

None

Signatures:

Reviewer	Print Name	Signature	Date
Initiator	Clarence Hasselbach	*Clarence Hasselbach*	2/10/10
Department Chair	Clarence Hasselbach	*Clarence Hasselbach*	2/10/10
Division Dean/Administrator	Rosemary Wilson	*Rosemary Wilson*	2/10/10
Vice President for Instruction	Phyllis Grzegorczyk	*Phyllis Grzegorczyk*	3-24-10
President			

Do not write in shaded area. Entered in: Banner_____ C&A Database_____ Log File_____ Board Approval_____

Please submit completed form to the Office of Curriculum and Assessment and email an electronic copy to sjohn@wccnet.edu for posting on the website.

logged 2/15/10 sjv

Information Systems: Programming in C++ (ASIST) Associate in Science Degree

Description:
This degree introduces students to C++ computer programming. Students are prepared 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.

Contact Information:
Division: Business and Computer Technologies
School: Transfer and University Parallel Programs
Department: Computer Instruction
Advisors: Philip Geyer, Clarence Hasselbach, Khaled Mansour

Articulation:
Eastern Michigan University, several BS degrees.
Admission Requirements:
Students need an Academic Math Level of 4 to enroll in MTH 181.

General Education Requirements (33 Credits)

ENG 111 and		Composition I	4
ENG 226		Composition II	3
Speech	*	Elective(s)	3
MTH 181	**	Mathematical Analysis I	4
Nat. Sci.	***	Elective(s)	4
ECO 211 and		Principles of Economics I	3
ECO 222		Principles of Economics II	3
Soc. Sci.		Elective(s)	3
Arts/Hum.	****	Elective(s)	6

Major/Area Requirements (18 Credits)

CIS 110	Introduction to Computer Information Systems	3
CIS 121	Linux/UNIX I: Fundamentals	3
CPS 171	Introduction to Programming with C++	4
CPS 271	Object Features of C++	4
CPS 272	Data Structures with C++	4

Required Support Courses (9 Credits)

BMG 106	Legal Basics in Business	3
BMG 140	Introduction to Business	3
BMG 200	Human Relations in Business	3

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

Footnotes:
*See the EMU Diverse World Requirement list.
**MTH 181 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 a four-year institution should choose a lab-based, MACRAO-approved science course.
****PHL 205 or PHL 250 are strongly recommended.

Students must meet the Computer and Information Literacy Graduation Requirement. See General Education

Graduation Requirements in the WCC Bulletin.

This website is for informational purposes only and is not to be construed as a binding offer or contract between WCC and the student. The information presented here is believed accurate, but is NOT guaranteed and is subject to change without notice.

For official information, <u>see an Advisor.</u>

PROGRAM PROPOSAL FORM

☐ **Preliminary Approval** – Check here when using this form for preliminary approval of a program proposal, and respond to the items in general terms.

☒ **Final Approval** – Check here when completing this form after the Vice President for Instruction has given preliminary approval to a program proposal. For final approval, complete information must be provided for each item.

Program Name:	Information Systems Transfer Degree	**Program Code:**
Division and Department:	BCT - CISD	ASIST
Type of Award:	☐ AA ☒ AS ☐ AAS ☐ Cert. ☐ Adv. Cert. ☐ Post-Assoc. Cert. ☐ Cert. of Comp.	
Effective Term/Year:	200901	**CIP Code:**
Initiator:	Clarence Hasselbach and Neil Gudsen	11.0103

Program Features Program's purpose and its goals. Criteria for entry into the program, along with projected enrollment figures. Connection to other WCC programs, as well as accrediting agencies or professional organizations. Special features of the program.	This program has been developed in cooperation with the faculty of the College of Business of Eastern Michigan University and is intended to serve primarily as a transfer degree into the undergraduate Computer Information Systems program at EMU. The requirements for this program have been kept simple, and it is the objective of this program to allow students to complete the program as rapidly as possible and thus enable a quick transition to the undergraduate programs in Computer Information Systems at EMU.
Need Need for the program with evidence to support the stated need.	"Research from **Robert Half International** and others suggests that not only will **IT salaries** increase slightly in 2009, but also that IT professionals with key skills could find themselves in demand …. The professional staffing and consulting firm estimates that IT salaries could increase by about 3.7 percent next year…." Source: CIO Magazine, October 24, 2008 http://www.cio.com/article/456568/IT_Salaries_Expected_to_Rise_in_

Program Outcomes/Assessment State the knowledge to be gained, skills to be learned, and attitudes to be developed by students in the program. Include assessment methods that will be used to determine the effectiveness of the program.	Outcomes	Assessment method
	1. **C++ Foundations:** At the conclusion of this program, students will be able to identify and analyze C++ Object Oriented techniques such as exceptions, operator overloading, polymorphism, and templates.	1. Common departmentally created final exam.
	2. **Data Structures using STL:** At the conclusion of this program, students will be able to identify and analyze STL data structures such as vectors, stacks, linked lists, queues, trees and hash maps.	2. Common departmentally created final exam.
	3. **Recursive Algorithms:** At the conclusion of this program, students will be able to identify and analyze the efficiency of recursive algorithms.	3. Common departmentally created final exam.
	4. Sound Programming Practices:	

At the conclusion of this program, students will demonstrate sound software engineering techniques in developing a working software program. This will include creating a program that is logical, easy to understand, with properly indented code to solve a stated problem.	4. Common departmentally created final exam.

Curriculum	
List the courses in the program as they should appear in the catalog. List minimum credits required. Include any notes that should appear below the course list.	**General Education and MACRAO Requirements:** **33-34 Credits**

General Education and MACRAO Requirements: **33-34 Credits**

1. English Writing Requirement   **(7 credits)**
ENG 111 Composition I   4
ENG 226   Composition II   3

2. Math/Science Requirement   **(8-9 credits)**
MTH 181[1] Mathematical Analysis (Must complete at WCC)   4
Complete one course*   4
  *Choose from courses approved by WCC to satisfy the MACRAO lab science requirement.

3. Social Science Requirement   **(9 credits)**
ECO 211 Principles of Economics I   3
ECO 222 Principles of Economics II   3
Complete one course: See note below   3
Choose from courses approved by WCC to satisfy the MACRAO Social Science requirement

4. Humanities Requirement   **(9 credits)**
Complete one course: (WCC Speech Requirement)   3
COM 101, 102, 142, 183, 200 or 225
    Complete one course: PHL 205 or 250 strongly recommended   3
Choose from courses approved by WCC to satisfy the MACRAO Humanities requirement
    Complete one course: 3
Choose from courses approved by WCC to satisfy the MACRAO Humanities requirement

WCC Program Requirements   **27 Credits**

   Major/Area requirements   **(18 credits)**
CIS 110 Intro to Computer Information Systems   3
CIS 121 Unix/Linux Fundamentals   3
CPS 171 Intro to Programming with C++   4
CPS 271 Object Features of C++   4
CPS 272 Data Structures with C++   4

Support Courses: **(9 credits)**
BMG 106 Legal Basics in Business   3
BMG 140 Introduction to Business   3
BMG 200 Human Relations in Business   3

Total Program Hours   **60-61 Credits**
[1] **Meets EMU's Learning beyond the Classroom requirement.**

Budget		START-UP COSTS	ONGOING COSTS
Specify program costs in the following areas, per academic year:	Faculty	No new costs	No new costs
	Training/Travel	No new costs	No new costs
	Materials/Resources	No new costs	No new costs
	Facilities/Equipment	No new costs	No new costs
	Other	No new costs	No new costs
	TOTALS:	No new costs	No new costs

Program Description for Catalog and Web site	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.
Program Information	Accreditation/Licensure - None

Advisors – Clarence Hasselbach, Philip Geyer, Khaled Mansour

Advisory Committee - CIS Advisory Committee

Admission requirements - Students will need to achieve academic math level 4 to enroll in MTH 181.

Articulation agreements – In progress with Eastern Michigan University

Continuing eligibility requirements - None |

Assessment plan:

Program outcomes to be assessed	Assessment tool	When assessment will take place	Courses/other populations	Number students to be assessed
C++Foundations: At the conclusion of this program, students will be able to identify and analyze C++ object Oriented techniques such as exceptions, operator overloading, polymorphism, and templates.	Common final examination to be prepared by the CIS department	Once every three years beginning Winter 2012	Minimum of one section of CPS 272	Random selection of 10 or more students.
Data Structures using STL: At the conclusion of this program, students will be able to identify and analyze STL data structures such as vectors, stacks, linked lists, queues, trees and hash maps.	Common final examination to be prepared by the CIS department	Once every three years beginning Winter 2012	Minimum of one section of CPS 272	Random selection of 10 or more students.
Recursive Algorithms: At the conclusion of this program, students will be able to identify and analyze the efficiency of recursive algorithms.	Common final examination to be prepared by the CIS department	Once every three years beginning Winter 2012	Minimum of one section of CPS 272	Random selection of 10 or more students.
Sound Programming Practices: At the conclusion of this program, students will demonstrate sound software engineering techniques in developing a working software program. This will include creating a program that is logical, easy to understand, with properly indented code to solve a stated problem.	Common final examination to be prepared by the CIS department	Once every three years beginning Winter 2012	Minimum of one section of CPS 272	Random selection of 10 or more students.

Scoring and analysis plan:

1. Indicate how the above assessment(s) will be scored and evaluated (e.g. departmentally developed rubric, external evaluation, other). Attach the rubric.

   Departmentally developed rubric. See attached.

2. Indicate the standard of success to be used for this assessment.

   At least 75% of students must score at least 70% or better on all learning outcome evaluations.

3. Indicate who will score and analyze the data.

   Assessment materials will be analyzed by the CIS Department.

4. Explain how and when the assessment results will be used for program improvement.

   If the standard of success is not achieved, the program will be evaluated.

REVIEWER	PRINT NAME	SIGNATURE	DATE
Department Chair/Area Director	Clarence Hasselbach	Clarence Hasselbad	10/31/2008
Dean	Rosemary Wilson	Rosemary Wilson	10/31/08
Vice President for Instruction ☐ Approved for Development ☒ Final Approval	Roger M. Palay	Roger M. Palay	12/2/08
President	Larry Whitworth	Larry Whitworth	4/28/09
Board Approval			04/28/09

Please return completed form to the Office of Curriculum & Assessment and email an electronic copy to **sjohn@wccnet.edu** for posting on the website.

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[i] Meets EMU's Learning beyond the Classroom requirement.

logged 11/3/08
Office of Curriculum & Assessment

Program Proposal Form 8-2005

Transfer and University Parallel Programs

If your goal is to continue your education toward a baccalaureate degree, then transfer and university parallel programs is the track for you. Complete the first two years of study in a supportive environment with small classes and personal attention.

Business (AABAS)
Criminal Justice (AACJ)
Digital Video Production (AADVP)
Educaton, Elementary (AAELEM)
Education, Secondary (AASECO)
Exercise Science (ASESCI)
Human Services (AAHUST)
Liberal Arts Transfer (AALAT)
Math and Science (ASMSAS)
   1. Pre-Medicine Concentration (BMED)
   2. Mathematics/Computer Science Concentration (COMS)
   3. Physics/Pre-Engineering Concentration (PHYS)

Before beginning any transfer program, a student should consult with an academic advisor or counselor to obtain a program articulation agreement, or a transfer guide. Early in the program, the student should contact an undergraduate advisor at the transfer college for specific admission and curriculum requirements and, if available, an unofficial transfer-credit evaluation.

Copies of articulation agreements and transfer guides are available in the Counseling Office on the second floor of the Student Center Building. Computers with access to the Internet Web sites of four-year colleges and universities are also available there.

Systems Development and Administration

Develop and manage computer systems using universal operating systems.

Information Systems Transfer (ASIST)
Associate in Science Degree
Program Effective Term: Fall 2009

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.

Program Admission Requirements:
Academic Math Level 4 or higher to enroll in MTH 181.

General Education Requirements		(33 credits)
ENG 111 and	Composition I	4
ENG 226	Composition II	3
Speech	Elective(s)*	3
MTH 181	Mathematical Analysis I**	4
Nat. Sci.	Elective(s)***	4
ECO 211 and	Principles of Economics I	3
ECO 222	Principles of Economics II	3
Arts/Human.	Elective(s)****	9

Major/Area Requirements		(18 credits)
CIS 110	Introduction to Computer Information Systems	3
CIS 121	Linux/UNIX I: Fundamentals	3
CPS 171	Introduction to Programming with C++	4
CPS 271	Object Features of C++	4
CPS 272	Data Structures with C++	4

Required Support Courses		(9 credits)
BMG 106	Legal Basics in Business	3
BMG 140	Introduction to Business	3
BMG 200	Human Relations in Business	3

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

Notes:

Program Information Report

*See the EMU Diverse World Requirement list.
**MTH 181 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 a 4-yr institution should choose a lab-based, MACRAO-approved science course.
****PHL 205 or PHL 250 are strongly recommended.*

Students must meet the Computer and Information Literacy Graduation Requirement. See General Education Graduation Requirements in the WCC Bulletin.

Information Systems Transfer Degree

Associate Degree

Description:

This program prepares students to transfer to Eastern Michigan University 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.

General Education and MACRAO Requirements: **33-34 Credits**

1. **English Writing Requirement (7 credits)**
   ENG 111 Composition I 4
   ENG 226 3

2. **Math/Science Requirement   (8-9 credits)**
   MTH 181[1] Mathematical Analysis (Must complete at WCC) 4
   Complete one course* 4
       Choose from courses approved by WCC to
       Satisfy the MACRAO lab science requirement

3. **Social Science Requirement   (9 credits)**
   ECO 211 Principles of Economics I 3
   ECO 222 Principles of Economics II 3
   Complete one course: See note below 3
       Choose from courses approved by WCC to
       satisfy the MACRAO Social Science requirement

4. **Humanities Requirement   (9 credits)**
   Complete one course: (WCC Speech Requirement) 3
       COM 101, 102, 142, 183, 200 or 225
   Complete one course: PHL 205 or 250 strongly recommended 3
       Choose from courses approved by WCC to
       satisfy the MACRAO Humanities requirement
   Complete one course: See note below 3
       Choose from courses approved by WCC to
       satisfy the MACRAO Humanities requirement

WCC Program Requirements   **27 Credits**

   Major/Area requirements   (18 credits)
   CIS 110 Intro to Computer Information Systems 3
   CIS 121 Unix/Linux Fundamentals 3
   CPS 171 Intro to Programming with C++ 4
   CPS 271 Object Features of C++ 4
   CPS 272 Data Structures with C++ 4

Support Courses: **(9 credits)**
BMG 106 Legal Basics in Business 3
BMG 140 Introduction to Business 3
BMG 200 Human Relations in Business 3

Total Program Hours

60-61 Credits

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[1] Meets EMU's Learning beyond the Classroom requirement.