

# SCIENCE, TECHNOLOGY, ENGINEERING, AND MATH (STEM) - ASSOCIATE OF SCIENCE DEGREE (AS)

Explore More About This Program: <https://cwi.edu/program/science-technology-engineering-and-math-stem>

## Degree Quick Facts

- **Instructional School:** Math and Science
- **Department:** Mathematics
- **Program Code:** STEM.AS
- **Program Type:** Academic Transfer
- **Available Fully Online:** No
- **Eligible for Federal Financial Aid:** Yes

## Degree Requirements

Course	Course Title	Min Credits
<b>General Education Requirements</b>		
<i>Complete the following course to fulfill the Connecting with Ideas requirement:</i>		
CWI 101	Connecting With Ideas	3
<i>Complete the following courses to fulfill the GEM 1 requirement:</i>		
ENGL 101	Writing and Rhetoric I	3
ENGL 102	Writing and Rhetoric II	3
<i>Complete the following course to fulfill the GEM 2 requirement:</i>		
<u>GEM 2 - Oral Communication course</u>		2
<i>Complete one of the following courses to fulfill the GEM 3 requirement:</i>		
MATH 147 or MATH 170	College Algebra and Trigonometry Calculus I	5
<i>Complete the following courses to fulfill the GEM 4 requirement:</i>		
Select one lecture/lab combination from the STEM AS: GEM 4 Options list below		4-5
<u>GEM 4 - Scientific Ways of Knowing course</u> <sup>1</sup>		3-4
<i>Complete the following courses to fulfill the GEM 5 requirement:</i>		
<u>GEM 5 - Humanistic &amp; Artistic Ways of Knowing course</u>		3
<u>GEM 5 - Humanistic &amp; Artistic Ways of Knowing course</u> <sup>1</sup>		3
<i>Complete the following courses to fulfill the GEM 6 requirement:</i>		
SCIE 102	Ethics in Science <sup>2</sup>	3
<u>GEM 6 - Social &amp; Behavioral Ways of Knowing course</u> <sup>1</sup>		3
<i>Complete the following course to fulfill the Global Perspectives requirement:</i>		
<u>Global Perspectives course</u>		3
<b>Major Requirements</b>		
Select one of the following options:		4-5
Option 1:		
BIOL 112	Biology II	
BIOL 112L	Biology II Lab	
Option 2:		
CHEM 102	Essentials of Organic and Biochemistry	
CHEM 102L	Essentials of Organic and Biochemistry Lab	
Option 3:		
CHEM 112	General Chemistry II	
CHEM 112L	General Chemistry II Lab	
Option 4:		
PHYS 112	General Physics II	
PHYS 112L	General Physics II Lab	
Option 5:		
PHYS 212	Physics for Scientists and Engineers II	

PHYS 212L	Physics for Scientists and Engineers II Lab	
MATH 170	Calculus I <sup>3</sup>	4-5
or MATH 175	Calculus II	
SCIE 290	STEM Capstone	1
Select 6-8 credits from the Approved STEM Courses list below		6-8
Select 1-7 elective credits to bring the total credits earned to 60		1-7

**Minimum Credit Hours Required** **60**

- <sup>1</sup> Course must come from a different discipline.  
<sup>2</sup> This course fulfills the Ethics Reasoning requirement for an associate degree from CWI.  
<sup>3</sup> If MATH 170 was completed in order to meet the GEM 3 requirement, student must complete MATH 175 in order to fulfill this major requirement. MATH 170 will not fulfill both the GEM 3 requirement and the major requirement.

## STEM AS: GEM 4 Options

Course	Course Title	Min Credits
Select one of the following options to fulfill the GEM 4 requirement:		4-5
Option 1:		
BIOL 111	Biology I	
BIOL 111L	Biology I Lab	
Option 2:		
CHEM 101	Introduction to Chemistry	
CHEM 101L	Introduction to Chemistry Lab	
Option 3:		
CHEM 111	General Chemistry I	
CHEM 111L	General Chemistry I Lab	
Option 4:		
PHYS 111	General Physics I	
PHYS 111L	General Physics I Lab	
Option 5:		
PHYS 211	Physics for Scientists and Engineers I	
PHYS 211L	Physics for Scientists and Engineers I Lab	

## STEM Elective Courses

The following list notes the courses which, in addition to the Mathematical Ways of Knowing (GEM 3) and Scientific Ways of Knowing (GEM 4) courses, will count as approved STEM courses. Students should choose **6-8 credits** of coursework from the following:

Course	Course Title	Min Credits
AMET 121	DC Circuits and Application	5
AMET 231	Industrial Robotics	5
AMET 236	Fluid Power Systems	2
BIOL 112	Biology II	3
BIOL 112L	Biology II Lab	1
BIOL 113	Biology III: Principles of Structure and Function	3
BIOL 113L	Biology III: Principles of Structure and Function Lab	1
BIOL 228	Human Anatomy and Physiology II	3
BIOL 228L	Human Anatomy and Physiology II Lab	1
BIOL 280	Pathophysiology	4
CHEM 112	General Chemistry II	3
CHEM 112L	General Chemistry II Lab	2
CHEM 253	Quantitative Analysis	3
CHEM 253L	Quantitative Analysis Lab	2
CHEM 298	Organic Chemistry I	3
CHEM 298L	Organic Chemistry I Lab	2

CHEM 299	Organic Chemistry II	3
CHEM 299L	Organic Chemistry II Lab	2
CPSC 111	Introduction to Python Programming	3
CPSC 121	Computer Science I	4
CPSC 221	Computer Science II	3
ENGR 210	Engineering Mechanics: Statics	3
ENGR 220	Engineering Mechanics: Dynamics	3
ENVI 260	General Ecology	3
ENVI 260L	General Ecology Lab	1
ENVI 280L	Field Biology	3
EXHS 243	Applied Kinesiology	3
FERM 110	Grapes and Hops: Specialty Crops	3
GEOS 275	Field Geology	4
GIS 126	Fundamentals of GIS	3
GIS 226	Spatial Analysis With GIS	3
GIS 240	Python Scripting for GIS	3
MATH 175	Calculus II	4
MATH 176	Discrete Mathematics	4
MATH 230	Introduction to Linear Algebra	3
MATH 275	Calculus III	4
MMBS 250	General Microbiology	3
MMBS 250L	General Microbiology Lab	1
MMBS 260	Introduction to Cell Biology	3
MMBS 260L	Introduction to Cell Biology Lab	1
MMBS 270	Introduction to Pharmacology	3
MMBS 280	Genetics	3
MMBS 280L	Genetics Lab	1
NURS 100	Fundamentals of Nursing and Health Assessment	3
NURS 103	Nursing and Health Assessment Skills Lab/Clinical	3
NURS 106	Basic Pharmacology for Nursing	3
NURS 201	Nursing Specialties Clinical	2
NURS 203	Advanced Medical Surgical Nursing Lab/Clinical	4
PHYS 212	Physics for Scientists and Engineers II	4
PHYS 212L	Physics for Scientists and Engineers II Lab	1
SWDV 105	Introduction to Programming	4

## Plan of Study Guide

*The course sequence listed below is strongly recommended in order to complete your program requirements. Please register for each semester as shown using the Student Planning tool in myCWI. Plans may be modified to fit the needs of part-time students by adding additional semesters. Consult your Student Success Advisor for any questions regarding this course sequence plan.*

### First Year

		Credit Hours
<b>Fall</b>		
CWI 101	Connecting With Ideas	3
ENGL 101	Writing and Rhetoric I (GEM 1)	3
MATH 147 or MATH 170	College Algebra and Trigonometry (GEM 3) or Calculus I	5
GEM 4	Select one lecture/lab combination from the STEM AS: GEM 4 Options list below	4-5
<b>Total Semester Credit Hours</b>		<b>15</b>
<b>Spring</b>		
COMM 100	Communication Matters (Recommended GEM 2) <sup>1</sup>	2
ENGL 102	Writing and Rhetoric II (GEM 1)	3

MATH 170 or MATH 175	Calculus I <sup>2</sup> or Calculus II	4-5
<b>GEM 5 - Humanistic &amp; Artistic Ways of Knowing course</b>		<b>3</b>
BIOL, CHEM, or PHYS Option	Select one lecture/lab combination from the STEM AS: Second BIOL, CHEM, or PHYS Options list below <sup>3</sup>	4-5
<b>Total Semester Credit Hours</b>		<b>17</b>
<b>Second Year</b>		
<b>Fall</b>		
SCIE 102	Ethics in Science (GEM 6) <sup>4</sup>	3
<b>GEM 5 - Humanistic &amp; Artistic Ways of Knowing course</b> <sup>5</sup>		<b>3</b>
<b>Global Perspectives course</b>		<b>3</b>
STEM Elective	Select a STEM course from the list below	3-5
Elective	Select an elective course	3
<b>Total Semester Credit Hours</b>		<b>15</b>
<b>Spring</b>		
SCIE 290	STEM Capstone	1
<b>GEM 4 - Scientific Ways of Knowing course</b> <sup>5</sup>		<b>3-5</b>
<b>GEM 6 - Social &amp; Behavioral Ways of Knowing course</b> <sup>5</sup>		<b>3</b>
STEM Elective	Select a STEM course from the list below	3-5
Elective	Select 3-4 credits to bring the total credits earned to 60, if needed	3-4
<b>Total Semester Credit Hours</b>		<b>13</b>
<b>Minimum Credit Hours Required</b>		<b>60</b>

- <sup>1</sup> This general education (GE) course is recommended by the department as the most beneficial GE option for students in this program. **Please note that students may fulfill their GE requirement by completing another course from within the applicable general education category.**
- <sup>2</sup> If MATH 170 was completed in order to meet the GEM 3 requirement, student must complete MATH 175 in order to fulfill this major requirement. MATH 170 will not fulfill both the GEM 3 requirement and the major requirement.
- <sup>3</sup> Select the second BIOL, CHEM, or PHYS lecture/laboratory course combination in sequence to compliment the GEM 4 Option taken in the prior semester (refer to the STEM AS: Second BIOL, CHEM, or PHYS Options list below).
- <sup>4</sup> This course fulfills the Ethics Reasoning requirement for an associate degree from CWI.
- <sup>5</sup> Course must come from a different discipline.

### STEM AS: GEM 4 Options

Course	Course Title	Min Credits
Select one of the following options to fulfill the GEM 4 requirement:		
Option 1:		
BIOL 111	Biology I	4-5
BIOL 111L	Biology I Lab	
Option 2:		
CHEM 101	Introduction to Chemistry	4-5
CHEM 101L	Introduction to Chemistry Lab	
Option 3:		
CHEM 111	General Chemistry I	4-5
CHEM 111L	General Chemistry I Lab	
Option 4:		
PHYS 111	General Physics I	4-5
PHYS 111L	General Physics I Lab	
Option 5:		
PHYS 211	Physics for Scientists and Engineers I	4-5
PHYS 211L	Physics for Scientists and Engineers I Lab	

**STEM AS: Second BIOL, CHEM, or PHYS Options**

Course	Course Title	Min Credits
Select one of the following options:		4-5
Option 1 (select the following courses if you completed BIOL 111 and BIOL 111L for GEM 4):		
BIOL 112	Biology II	
BIOL 112L	Biology II Lab	
Option 2 (select the following courses if you completed CHEM 101 and CHEM 101L for GEM 4):		
CHEM 102	Essentials of Organic and Biochemistry	
CHEM 102L	Essentials of Organic and Biochemistry Lab	
Option 3 (select the following courses if you completed CHEM 111 and CHEM 111L for GEM 4):		
CHEM 112	General Chemistry II	
CHEM 112L	General Chemistry II Lab	
Option 4 (select the following courses if you completed PHYS 111 and PHYS 111L for GEM 4):		
PHYS 112	General Physics II	
PHYS 112L	General Physics II Lab	
Option 5 (select the following courses if you completed PHYS 211 and PHYS 211L for GEM 4):		
PHYS 212	Physics for Scientists and Engineers II	
PHYS 212L	Physics for Scientists and Engineers II Lab	

**STEM Elective Courses**

The following list notes the courses which, in addition to the Mathematical Ways of Knowing (GEM 3) and Scientific Ways of Knowing (GEM 4) courses, will count as approved STEM courses. Students should choose **6-8 credits** of coursework from the following:

Course	Course Title	Min Credits
AMET 121	DC Circuits and Application	5
AMET 231	Industrial Robotics	5
AMET 236	Fluid Power Systems	2
BIOL 112	Biology II	3
BIOL 112L	Biology II Lab	1
BIOL 113	Biology III: Principles of Structure and Function	3
BIOL 113L	Biology III: Principles of Structure and Function Lab	1
BIOL 228	Human Anatomy and Physiology II	3
BIOL 228L	Human Anatomy and Physiology II Lab	1
BIOL 280	Pathophysiology	4
CHEM 112	General Chemistry II	3
CHEM 112L	General Chemistry II Lab	2
CHEM 253	Quantitative Analysis	3
CHEM 253L	Quantitative Analysis Lab	2
CHEM 298	Organic Chemistry I	3
CHEM 298L	Organic Chemistry I Lab	2
CHEM 299	Organic Chemistry II	3
CHEM 299L	Organic Chemistry II Lab	2
CPSC 111	Introduction to Python Programming	3
CPSC 121	Computer Science I	4
CPSC 221	Computer Science II	3
ENGR 210	Engineering Mechanics: Statics	3
ENGR 220	Engineering Mechanics: Dynamics	3
ENVI 260	General Ecology	3
ENVI 260L	General Ecology Lab	1
ENVI 280L	Field Biology	3
EXHS 243	Applied Kinesiology	3
FERM 110	Grapes and Hops: Specialty Crops	3
GEOS 275	Field Geology	4

GIS 126	Fundamentals of GIS	3
GIS 226	Spatial Analysis With GIS	3
GIS 240	Python Scripting for GIS	3
MATH 175	Calculus II	4
MATH 176	Discrete Mathematics	4
MATH 230	Introduction to Linear Algebra	3
MATH 275	Calculus III	4
MMBS 250	General Microbiology	3
MMBS 250L	General Microbiology Lab	1
MMBS 260	Introduction to Cell Biology	3
MMBS 260L	Introduction to Cell Biology Lab	1
MMBS 270	Introduction to Pharmacology	3
MMBS 280	Genetics	3
MMBS 280L	Genetics Lab	1
NURS 100	Fundamentals of Nursing and Health Assessment	3
NURS 103	Nursing and Health Assessment Skills Lab/Clinical	3
NURS 106	Basic Pharmacology for Nursing	3
NURS 201	Nursing Specialties Clinical	2
NURS 203	Advanced Medical Surgical Nursing Lab/Clinical	4
PHYS 212	Physics for Scientists and Engineers II	4
PHYS 212L	Physics for Scientists and Engineers II Lab	1
SWDV 105	Introduction to Programming	4

## Program Learning Outcomes

Upon successful completion of this program, students will be able to:

- Complete coursework in a range of STEM disciplines to increase their awareness of academic and career options, and complete advanced study in at least one STEM field.
- Demonstrate problem-solving skills within a scientific, mathematical, or technological context.
- Reflect on their learning experiences and create a portfolio that demonstrates their growth as a nascent scientist, mathematician, engineer, or technician over the course of their program of study.