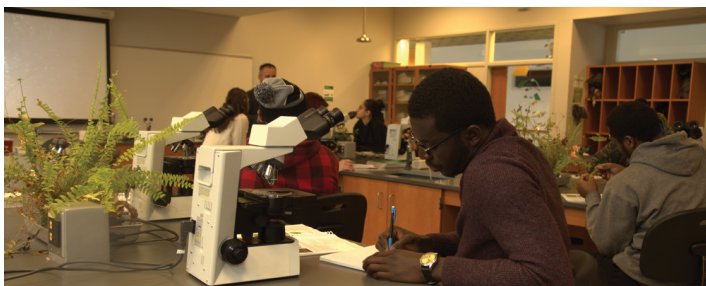


# ASSOCIATE OF SCIENCE WITH A CONCENTRATION IN BIOLOGY



The Associate of Science in Biology is based on the Ohio Guaranteed Transfer Pathway in Biology. It is recommended for students planning to start at Tri-C and transfer to a four-year institution to major in Biology. A four-year degree in Biology can prepare students for a variety of careers in a number of industries including entry-level positions in University Research labs, Government Research labs, Hospital/Medical labs, Zoos, and Secondary education (7-12 Teaching Licensure required). A Biology degree also serves as a strong foundation for students planning to go on to pursue graduate studies in biological sciences, medicine, dentistry, veterinary medicine, and physical therapy.

The Biology program at Cuyahoga Community College (Tri-C®) will provide students with the foundations in biology, chemistry, mathematics, scientific inquiry, essential laboratory skills, critical thinking, quantitative analysis, problem solving, and communication skills they need to succeed at their four-year institution.

It is important to note that some bachelor-degree granting programs may be competitive and admission into the program is not guaranteed. Students should check with individual institutions for their program admission requirements. In addition, some bachelor-degree granting institutions require additional general education courses outside of the Ohio Transfer Module and students may be required to take these courses in their junior or senior year. Students will still be able to follow this pathway and complete their bachelor's degree in approximately 60 additional credit hours.

**Program contact:** [Learn more](#)

## Related Degrees and Certificates

Ohio Transfer 36, Certificate of Proficiency

## Program Admissions Requirements

- ENG-0995 Applied College Literacies or sufficient score on English Placement test to enroll in ENG-1010 College Composition I.
- MATH-0965 Intermediate Algebra or qualified Math Placement to enroll in MATH-1530 College Algebra or MATH-1580 Precalculus
- Sufficient score on Chemistry Placement Test to enroll in CHEM-1300 or CHEM-1010 with a grade of "C" or higher. All students pursuing this program need to take the Chemistry Placement Test to determine eligibility to enroll in CHEM-1300, which is a required course. CHEM-1010 is only required for students whose score on the Chemistry Placement test doesn't qualify for CHEM-1300.

## Program Learning Outcomes

This program is designed to prepare students to demonstrate the following learning outcomes:

- Apply the process of scientific inquiry to develop and explore questions about the natural world and effectively communicate the findings.
- Analyze the diversity of life on Earth resulting from evolution.
- Analyze the relationships and interactions between living things and their environment.
- Relate concepts from mathematics and other science disciplines to the analysis of biological processes.
- Demonstrate safe and proper use of experimental techniques and tools/instruments.
- Utilize critical thinking, problem solving, quantitative analysis, and effective communication skills to be successful when transferring to a four year program in Biology and pursuing a career in the field of Biology.

First Semester		Credit Hours
GEN-1070	First Year Success Seminar	1
Select one of the following:		3-7
MATH-1410	Elementary Probability and Statistics I <sup>1</sup>	
MATH-1580	Precalculus <sup>1</sup>	
MATH-1530 & MATH-1540	College Algebra and Trigonometry <sup>1</sup>	
Select one of the following:		4
BIO-1500	Principles of Biology I	
BIO-150H	Honors Principles of Biology I	
Select one of the following:		5
CHEM-1300 & CHEM-130L	General Chemistry I and General Chemistry Laboratory I <sup>2</sup>	
CHEM-130H	Honors General Chemistry I	
<b>Credit Hours</b>		<b>13-17</b>
Second Semester		Credit Hours
BIO-1510	Principles of Biology II	4
Select one of the following:		3
ENG-1010	College Composition I	
ENG-101H	Honors College Composition I	
Select one of the following:		5
MATH-1610	Calculus I	
MATH-161H	Honors Calculus I	
Select one of the following:		5
CHEM-1310 & CHEM-131L	General Chemistry II and General Chemistry Laboratory II	
CHEM-131H	Honors General Chemistry II	
<b>Credit Hours</b>		<b>17</b>
Third Semester		Credit Hours
CHEM-2300	Organic Chemistry I	5
Select one of the following:		3
COMM-101H	Honors Speech Communication	
COMM-1010	Fundamentals of Speech Communication	
Select one of the following:		3
ENG-1020	College Composition II	

ENG-102H	Honors College Composition II	
Select one of the following:		3
PSY-1010	General Psychology	
PSY-101H	Honors General Psychology	
Select one of the following Arts and Humanities/Civic Responsibility courses:		3
HUM-1020	The Individual in Society	
HUM-102H	Honors Individual in Society	
HUM-1030	The Individual in Cosmos	
PHIL-1000	Critical Thinking	
PHIL-2050	Bioethics	
<b>Credit Hours</b>		<b>17</b>
<b>Fourth Semester</b>		
Ohio Transfer 36 Arts and Humanities Requirement <sup>4</sup>		3
Select two of the following:		7-8
DEGR-XXXX	Biology Elective (see below list)	
CHEM-2310	Organic Chemistry II <sup>3</sup>	
PHYS-1210	College Physics I <sup>4</sup>	
PHYS-2310	General Physics I <sup>4</sup>	
DEGR-XXXX	Electives (see list below)	
Select one of the following:		3
SOC-1010	Introductory Sociology	
SOC-101H	Honors Introductory Sociology	
<b>Credit Hours</b>		<b>13-14</b>
<b>Total Credit Hours</b>		<b>60-65</b>

- <sup>1</sup> Students who place into MATH-1610 Calculus I should take MATH-1410 Elementary Probability and Statistics I or MATH-1620 Calculus II to meet this requirement. Students who place lower than MATH-1610 Calculus I should take either MATH-1580 Precalculus or MATH-1530 College Algebra and MATH-1540 Trigonometry, based on Math Placement Score, as a prerequisite to MATH-1610 Calculus I. MATH-153H Honors College Algebra and MATH-154H Honors Trigonometry together will also be accepted to meet this requirement.
- <sup>2</sup> Students who do not achieve sufficient score on Chemistry Placement Test will need to take CHEM-1010 as a prerequisite to CHEM-1300. CHEM-1010 can be applied towards elective requirements if students need to take it as a prerequisite to CHEM-1300.
- <sup>3</sup> Students pursuing a Biology degree as Pre-medicine, Pre-dentistry, Pre-veterinary medicine, or a Clinical Laboratory track are required to take CHEM-2310 Organic Chemistry II
- <sup>4</sup> The Physics requirement for four-year Biology programs varies from institution to institution. Check with your planned transfer institution and program to determine whether or not to select a Physics course towards elective requirements.
- <sup>5</sup> Must be taken from a different discipline than course chosen to fulfill Arts and Humanities/Civic Responsibility Requirement.

## Recommended Electives

Students can select from a combination of courses to fulfill the elective credits. For example, these could be made up of two 5 credit courses, one 5 credit course and one 3 credit course, two 3 credit courses and a 4 credit course, two 4 credit courses, etc. The below courses are recommended to fulfill elective credits. You should select elective

courses based on their planned program of study at their four-year institution.

Code	Title	Credit Hours
<b>Biology Electives</b>		
BIO-2060	Principles of Genetics	3
BIO-2150	Environmental Science	3
BIO-2500	Microbiology	4
<b>Pre-Medicine, Pre-Dentistry, Pre-Veterinary Medicine, or Medical Laboratory Track</b>		
CHEM-2310	Organic Chemistry II	5
<b>Education/Integrated Science (Seeking 7-12 Teaching Licensure)</b>		
BIO-2150	Environmental Science	3
ESCI-1410 & ESCI-141L or ESCI-141H	Physical Geology and Lab in Physical Geology Honors Physical Geology	4
EDUC-1011	Introduction to Education	3
EDUC-1411	Individuals with Exceptionalities	3
PSY-2110	Educational Psychology <sup>*</sup>	3

\* Meets Social and Behavioral Science Requirements.

MATH-1140, MATH-1141, MATH-1200, MATH-1270, and MATH-1280 can no longer count towards fulfilling the college-level mathematics requirement. These courses were re-classified as developmental mathematics by the state of Ohio in 2016. Tri-C established a 5-year transitioning window for students who had completed these courses prior to 2016 to apply them towards meeting graduation requirements, which expired in Summer 2021. It is highly recommended to see a counselor to determine the appropriate math required for your current major.