

BIOLOGY (BS) - SECONDARY EDUCATION TRACK

Program Overview

This degree combines broad training in biology with preparation for K-12 teaching through UTeach Columbus (<https://uteach.columbusstate.edu/>).

All educator preparation programs are approved by the Georgia Professional Standards Commission. In addition to the degree requirements, there are further requirements for teaching certification. Visit the Certification page (<https://cctl.columbusstate.edu/certification.php>) on the CSU Center for Quality Teaching and Learning (CCTL) website for detailed information about certification requirements and the certification process.

Career Opportunities

Middle or high school teaching in biology

Program of Study

Code	Title	Credit Hours
Core IMPACTS Area : Institutional Priorities ¹		4-5
Choose one of the following communication options		3
COMM 1110	Public Speaking	
Foreign Language Course Options		
AMSL, ARAB, CHIN, FREN, GERM, GREK, ITAL, JAPN, KREN, LATIN, PORT, SPAN - 1001, 1002, 2001, 2002; SWAH - 1001, 1002.		
Take one of the following courses		1-2
ITDS 1779	Scholarship Across the Disciplines	
LEAD 1705	Introduction to Servant Leadership	
PERS 1506	Perspectives 1-hour	
PERS 1507	Perspectives 2-hour	
Core IMPACTS Area : Mathematics & Quantitative Skills ¹		3-7
DATA 1501	Introduction to Data Science	3
MATH 1001	Quantitative Skills and Reasoning	3
MATH 1101	Introduction to Mathematical Modeling	3
MATH 1111	College Algebra	3
MATH 1113	Pre-Calculus	4
MATH 1125	Applied Calculus	3
MATH 1131	Calculus with Analytic Geometry I	4
MATH 1132	Calculus with Analytic Geometry II	4
MATH 1165	Computer-Assisted Problem Solving	3
MATH 1401	Introduction to Statistics	3
MATH 1501	Calculus I	4
MATH 2125	Introduction to Discrete Mathematics	3
STAT 1401	Elementary Statistics	3
Core IMPACTS Area : Political Science and U.S. History		6
HIST 2111	U. S. History to 1865	3
or HIST 2112	U. S. History since 1865	
POLS 1101	American Government	3
Core IMPACTS Area : Arts, Humanities, and Ethics		6
Select one Fine Arts course		3

ARTH 1100	Art Appreciation	
ARTH 2125	Introduction to the History of Art I– Prehistoric through Gothic	
ARTH 2126	Introduction to the History of Art II– Renaissance through Modern	
MUSC 1100	Music Appreciation	
THEA 1100	Theatre Appreciation	
ITDS 1145	Comparative Arts ²	
Select one Humanities course		3
ENGL 2111	World Literature I	
ENGL 2112	World Literature II	
ITDS 1155	The Western Intellectual Tradition	
ITDS 1774	Introduction to Digital Humanities	
PHIL 2010	Introduction to Philosophy	
ITDS 1145	Comparative Arts ²	
Core IMPACTS Area : Communicating in Writing		6
ENGL 1101	English Composition I	3
ENGL 1102	English Composition II	3
Core IMPACTS Area : Technology, Mathematics, and Sciences ^{1,3}		7-11
ANTH 1145	Human Origins	3
ASTR 1105	Descriptive Astronomy: The Solar System	3
ASTR 1106	Descriptive Astronomy: Stars and Galaxies	3
ASTR 1305	Descriptive Astronomy Lab	1
ATSC 1112	Understanding the Weather	3
ATSC 1112L	Understanding the Weather Lab	1
BIOL 1125	Contemporary Issues in Biology Non-Lab	3
BIOL 1215K	Introductory Biology	4
BIOL 1225K	Contemporary Issues in Biology with Lab	4
CHEM 1151 & 1151L	Survey of Chemistry I and Survey of Chemistry I Lab	4
CHEM 1152 & 1152L	Survey of Chemistry II and Survey of Chemistry II Lab	4
CHEM 1211 & 1211L	Principles of Chemistry I and Principles of Chemistry I Lab	4
CHEM 1212 & 1212L	Principles of Chemistry II and Principles of Chemistry II Lab	4
CPSC 1105	Introduction to Computing Principles and Technology	3
CPSC 1301K	Computer Science I	4
ENVS 1105	Environmental Studies	3
ENVS 1105L	Environmental Studies Laboratory	1
ENVS 1205K	Sustainability and the Environment	4
GEOG 2215	Introduction to the Geographic Information Systems	3
GEOL 1110	Natural Disasters: Our Hazardous Environment	3
GEOL 1121	Introductory Geoscience I: Physical Geology	3
GEOL 1121L	Introductory Geoscience I: Physical Geology Lab	1
GEOL 1122	Introductory Geo-sciences II: Historical Geology	3
GEOL 1322	Introductory Geo-sciences II: Historical Geology Lab	1
GEOL 2225	The Fossil Record	4
PHYS 1111 & PHYS 1311	Introductory Physics I and Introductory Physics I Lab	4

PHYS 1112	Introductory Physics II	4	Field of Study Requirements Total	18	
& PHYS 1312	and Introductory Physics II Lab		Required for the Major		
PHYS 1125	Physics of Color and Sound	3	Minimum grade of C is required.		
PHYS 1325	Physics of Color and Sound Lab	1	BIOL 3215K	Cell Biology	4
PHYS 2211	Principles of Physics I	4	BIOL 3216K	Genetics	4
& PHYS 2311	and Principles of Physics I Lab		BIOL 3217K	Ecology	4
PHYS 2212	Principles of Physics II	4	BIOL 4795	Capstone Senior Seminar	2
& PHYS 2312	and Principles of Physics II Lab		MATH 1111	College Algebra	3
Core IMPACTS Area : Social Sciences		6	Use a general elective to substitute for MATH 1111 if shown to be math ready at a higher level.		
Select one Behavioral Science course			Select the following UTeach Columbus Courses (only two attempts allowed for each of the following courses):		
ECON 2105	Principles of Macroeconomics		SPED 4115	Teaching Math and Science to Exceptional Learners (Students must earn a grade of B or better in order to be certified to teach in the state of Georgia.)	2
ECON 2106	Principles of Microeconomics		UTCH 1201	Step I: Inquiry Approaches to Teaching	1
PHIL 2030	Moral Philosophy		UTCH 1202	Step II: Inquiry-Based Lesson Design	1
PSYC 1101	Introduction to General Psychology		UTCH 2105	Knowing and Learning in Mathematics and Science	3
SOCI 1101	Introduction to Sociology		UTCH 2203	Step III: Technological and Pedagogical Content Knowledge	3
Select one World Cultures course		3	UTCH 3215	Research Methods	3
ANTH 1107	Discovering Archaeology		UTCH 3205	Classroom Interactions	3
ANTH 1105	Cultural Anthropology		UTCH 4205	Inquiry-Based Instruction	3
ANTH 2105	Ancient World Civilizations		UTCH 4485	Student Teaching	9
ANTH 2136	Language and Culture		UTCH 4795	Student Teaching Seminar	1
ENGL 2136	Language and Culture		Required for the Major Total	46	
GEOG 1101	World Regional Geography		Major Electives		
HIST 1111	World History to 1500		Minimum grade of C is required		
HIST 1112	World History since 1500		Select 3-4 credits from Cellular and Molecular Biology Electives	3-4	
ITDS 1156	Understanding Non-Western Cultures		BIOL 5117U	Medical Genetics and Genomics	
Core IMPACTS Total Hours		42	BIOL 5118U	Neuroscience	
Health and Wellness		3	BIOL 5215U	Developmental Biology	
KINS 1106	Lifetime Wellness	2	BIOL 5216U	Histology and Histotechniques	
or PHED 1205	Concepts of Fitness		BIOL 5217U	Cell and Molecular Techniques	
Select one of the following		1	BIOL 5218U	Introduction to Virology	
Any PEDS course			BIOL 5219U	Immunology	
MUSC 1206	Body Mapping (Music Majors Only)		BIOL 5225U	Microbial Pathogenesis	
			BIOL 5317U	Genomics and Bioinformatics Lab	
			BIOL 5318U	Neuroscience Lab	
			BIOL 5515U	Selected Topics in Cell and Molecular Biology	
			Select 3-4 hours from Organismal Biology Electives	3-4	
			BIOL 5245U	Comparative Animal Physiology	
			BIOL 5246U	Entomology	
			BIOL 5247U	Microbial Diversity	
			BIOL 5248U	Ornithology	
			BIOL 5249U	Parasitology	
			BIOL 5255U	Vertebrate Diversity	
			BIOL 5256U	Plant Taxonomy	
			BIOL 5257U	Biology of Aging	
			BIOL 5259U	Comparative Vertebrate Anatomy	
			BIOL 5265U	Food Microbiology	
Major Requirements					
Code	Title	Credit Hours			
Core Requirements					
Complete the core requirements for this program		45			
Field of Study Requirements					
Minimum grade of C is required					
BIOL 1107K	Principles of Biology I	4			
BIOL 1108K	Principles of Biology II	4			
BIOL 2206K	Organismic Biology I	4			
BIOL 2207K	Organismic Biology II	4			
Select 2 credit of General Electives		2			

¹ The hours applied in the Institutional Priorities; Mathematics & Quantitative Skills; and Technology, Mathematics, and Sciences areas must add to 18 credit hours.

² ITDS 1145 Comparative Arts, though listed under both Fine Arts and Humanities, may be taken only once.

³ At least 4 of the credit hours in this area must be in a lab science course.

BIOL 5525U	Selected Topics in Organismic Biology	
Select 3-4 credits from Ecological and Evolutionary Electives		3-4
BIOL 5285U	Aquatic Biology	
BIOL 5286U	Community Ecology	
BIOL 5287U	Conservation Genetics	
BIOL 5288U	Plant Ecology	
BIOL 5289U	Environmental Toxicology	
BIOL 5295U	Animal Communication	
BIOL 5535U	Selected Topics in Ecological and Evolutionary Biology	
Major Electives Total		11-12
General Electives		
Select 2-6 credits		2-6
Apply additional hours from Field of Study Requirements to General Electives		
General Electives Total		2-6
Total Credit Hours		123

¹ If ITDS 2125 Historical Perspectives on the Philosophy of Science and Mathematics is not taken in Area C.

Program Map

Suggested four year course schedule with MATH 0999 or lower

Course	Title	Credit Hours
First Year		
Fall		
Institutional Priorities	ITDS 1779 (2), LEAD 1705 (2), PERS 1506 (1; may be repeated with different topic), PERS 1507 (2)	1
Arts, Humanities, and Ethics	Fine Arts	3
Social Studies	World Culture	3
BIOL 1715	Professionalism and Careers in Biology (recommended Area F General Elective)	1
ENGL 1101	English Composition I (minimum grade of C)	3
MATH 1111	College Algebra (minimum grade of C) ¹	3
MATH 0999B or MATH 0999C	Support for College Algebra B ² or Support for College Algebra C	
Credit Hours		14
Spring		
BIOL 1107K	Principles of Biology I (minimum grade of C)	4
CHEM 1211 & 1211L	Principles of Chemistry I and Principles of Chemistry I Lab (minimum grade of C)	4
ENGL 1102	English Composition II (minimum grade of C)	3
MATH 1113	Pre-Calculus (minimum grade of C) ³	4
Credit Hours		15

Second Year

Fall		
BIOL 1108K	Principles of Biology II (minimum grade of C)	4
CHEM 1212 & 1212L	Principles of Chemistry II and Principles of Chemistry II Lab (minimum grade of C)	4
Institutional Priorities	COMM 1110 Public Speaking or foreign language 1001, 1002, 2001, 2002	3
Arts, Humanities and Ethics	Humanities. Recommended course:	3
ITDS 2125	Historical Perspectives on the Philosophy of Science and Mathematics ⁴	
KINS 1106 or PHED 1205	Lifetime Wellness or Concepts of Fitness	2
UTCH 1201	Step I: Inquiry Approaches to Teaching (minimum grade of C)	1
Credit Hours		17

Spring

BIOL 2206K	Organismic Biology I (minimum grade of C)	4
BIOL 2207K	Organismic Biology II (minimum grade of C)	4
General Electives	Elective	3
STAT 1401	Elementary Statistics (minimum grade of C)	3
UTCH 1202	Step II: Inquiry-Based Lesson Design (minimum grade of C)	1
Health and Wellness	PEDS Activity	1
Credit Hours		16

Third Year

Fall		
BIOL 3215K	Cell Biology (minimum grade of C)	4
BIOL 3216K	Genetics (minimum grade of C)	4
General Electives	Elective	2
UTCH 2105	Knowing and Learning in Mathematics and Science (minimum grade of C)	3
UTCH 3215	Research Methods (minimum grade of C)	3
Credit Hours		16
Spring		
Social Studies	Behavioral Science	3
BIOL 3217K	Ecology (minimum grade of C)	4
Program Electives	BIOL Cell/Molecular Senior Elective (minimum grade of C)	4
Program Electives	Organismal Elective (minimum grade of C)	4
UTCH 3205	Classroom Interactions (minimum grade of C)	3
Credit Hours		18

Fourth Year

Fall		
BIOL 4795	Capstone Senior Seminar (minimum grade of C)	2
Program Electives	BIOL Ecology/Evolution Senior Elective (minimum grade of C)	4

HIST 2111 or HIST 2112	U. S. History to 1865 or U. S. History since 1865	3
POLS 1101	American Government	3
UTCH 4205	Inquiry-Based Instruction (minimum grade of C)	3
Credit Hours		15
Spring		
SPED 4115	Teaching Math and Science to Exceptional Learners (minimum grade of B; see note below)	2
<p>There is a recent rule change for certification from the GaPSC. As of July 1, 2019, students must make a B or higher in the Exceptional Children's course. The course could be any of the following depending on your major: SPED 2256, EDCI 6228, KINS 4245, SPED 4115, PHED 6219. This rule change will not affect your graduation but you cannot become a certified educator with the state of Georgia until you receive the grade of B or higher in this course.</p>		
UTCH 4485	Student Teaching	9
UTCH 4795	Student Teaching Seminar (minimum grade of C)	1
Credit Hours		12
Total Credit Hours		123

¹ MATH 1111 College Algebra has 3 credits and counts in Program Requirements.

² MATH 0999B (2 credits) or MATH 0999C (1 credits), if required with MATH 1111, do not count toward the degree. These are College Algebra support classes that improve your chances of passing MATH 1111 College Algebra.

³ MATH 1113 Pre-Calculus has 4 credits. Count 3 credits in Mathematics and Quantitative Skills and 1 credit in Field of Study.

⁴ ITDS 2125 Historical Perspectives on the Philosophy of Science and Mathematics is recommended in Arts, Humanities and Ethics.

Suggested four year course schedule with MATH 1111 College Algebra

Course	Title	Credit Hours
First Year		
Fall		
Institutional Priorities	ITDS 1779 (2), LEAD 1705 (2), PERS 1506 (1; may be repeated with different topic), PERS 1507 (2)	1
Arts, Humanities and Ethics	Fine Arts	3
BIOL 1107K	Principles of Biology I (minimum grade of C)	4
BIOL 1715	Professionalism and Careers in Biology (recommended Area F General Elective)	1
ENGL 1101	English Composition I (minimum grade of C)	3
MATH 1111	College Algebra (minimum grade of C) ¹	3
Credit Hours		15

Spring

BIOL 1108K	Principles of Biology II (minimum grade of C)	4
CHEM 1211 & 1211L	Principles of Chemistry I and Principles of Chemistry I Lab (minimum grade of C)	4
ENGL 1102	English Composition II (minimum grade of C)	3
MATH 1113	Pre-Calculus (minimum grade of C) ²	4
Credit Hours		15

Second Year

Fall

BIOL 2206K	Organismic Biology I (minimum grade of C)	4
CHEM 1212 & 1212L	Principles of Chemistry II and Principles of Chemistry II Lab (minimum grade of C)	4
Social Studies	Behavioral Science	3
Arts, Humanities and Ethics	Humanities. Recommended course: ITDS 2125	3
ITDS 2125	Historical Perspectives on the Philosophy of Science and Mathematics (minimum grade of C) ³	
KINS 1106 or PHED 1205	Lifetime Wellness or Concepts of Fitness	2
UTCH 1201	Step I: Inquiry Approaches to Teaching (minimum grade of C)	1
Credit Hours		17

Spring

BIOL 2207K	Organismic Biology II (minimum grade of C)	4
BIOL 3216K	Genetics (minimum grade of C)	4
General Electives	Elective	3
Health and Wellness	PEDS Activity	1
STAT 1401	Elementary Statistics (minimum grade of C)	3
UTCH 1202	Step II: Inquiry-Based Lesson Design (minimum grade of C)	1
Credit Hours		16

Third Year

Fall

BIOL 3215K	Cell Biology (minimum grade of C)	4
Institutional Priorities	COMM 1110 Public Speaking or foreign language 1001, 1002, 2001, 2002	3
General Electives	Elective	2
UTCH 2105	Knowing and Learning in Mathematics and Science (minimum grade of C)	3
UTCH 3215	Research Methods (minimum grade of C)	3
Credit Hours		15

Spring

Social Studies	World Culture	3
Program Electives	Organismal Elective (minimum grade of C)	4
Program Electives	BIOL Cell/Molecular Senior Elective (minimum grade of C)	4
BIOL 3217K	Ecology (minimum grade of C)	4

UTCH 3205	Classroom Interactions (minimum grade of C)	3
Credit Hours		18

Fourth Year
Fall

BIOL 4795	Capstone Senior Seminar (minimum grade of C)	2
Program Electives	BIOL Ecology/Evolution Senior Elective (minimum grade of C)	4
HIST 2111 or HIST 2112	U. S. History to 1865 or U. S. History since 1865	3
POLS 1101	American Government	3
UTCH 4205	Inquiry-Based Instruction (minimum grade of C)	3
Credit Hours		15

Spring

SPED 4115	Teaching Math and Science to Exceptional Learners (minimum grade of B; see note below)	2
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There is a recent rule change for certification from the GaPSC. As of July 1, 2019, students must make a B or higher in the Exceptional Children's course. The course could be any of the following depending on your major: SPED 2256, EDCI 6228, KINS 4245, SPED 4115, PHED 6219. This rule change will not affect your graduation but you cannot become a certified educator with the state of Georgia until you receive the grade of B or higher in this course.

UTCH 4485	Student Teaching	9
UTCH 4795	Student Teaching Seminar (minimum grade of C)	1
Credit Hours		12
Total Credit Hours		123

¹ MATH 1111 College Algebra has 3 credits and counts in Program Requirements.

² MATH 1113 Pre-Calculus has 4 credits. Count 3 credits in Mathematics and Quantitative Skills and 1 credit in Field of Study.

³ ITDS 2125 Historical Perspectives on the Philosophy of Science and Mathematics is recommended in Arts, Humanities and Ethics.

Suggested four year course schedule with MATH 1113 Pre-Calculus or higher

Course	Title	Credit Hours
First Year		
Fall		
Institutional Priorities	ITDS 1779 (2), LEAD 1705 (2), PERS 1506 (1; may be repeated with different topic), PERS 1507 (2)	1
Arts, Humanities and Ethics	Fine Arts	3
BIOL 1107K	Principles of Biology I (minimum grade of C)	4
BIOL 1715	Professionalism and Careers in Biology (recommended Area F General Elective)	1

CHEM 1211 & 1211L	Principles of Chemistry I and Principles of Chemistry I Lab (minimum grade of C)	4
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ENGL 1101	English Composition I (minimum grade of C)	3
Credit Hours		16

Spring

BIOL 1108K	Principles of Biology II (minimum grade of C)	4
CHEM 1212 & 1212L	Principles of Chemistry II and Principles of Chemistry II Lab (minimum grade of C)	4
ENGL 1102	English Composition II (minimum grade of C)	3
MATH 1113	Pre-Calculus (minimum grade of C) ¹	4
Credit Hours		15

Second Year
Fall

BIOL 2206K	Organismic Biology I (minimum grade of C)	4
General Electives	Elective	3
Arts, Humanities and Ethics	Humanities. Recommended course:	3

ITDS 2125	Historical Perspectives on the Philosophy of Science and Mathematics (minimum grade of C) ²	2
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KINS 1106 or PHED 1206	Lifetime Wellness or Concepts of Fitness for Online Students	2
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STAT 1401	Elementary Statistics (minimum grade of C)	3
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UTCH 1201	Step I: Inquiry Approaches to Teaching (minimum grade of C)	1
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Credit Hours		16
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Spring

BIOL 2207K	Organismic Biology II (minimum grade of C)	4
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BIOL 3216K	Genetics (minimum grade of C)	4
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Institutional Priorities	COMM 1110 Public Speaking or foreign language 1001, 1002, 2001, 2002	3
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Social Studies	Behavioral Science	3
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Health and Wellness	PEDS Activity	1
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UTCH 1202	Step II: Inquiry-Based Lesson Design (minimum grade of C)	1
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Credit Hours		16
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Third Year

Fall

General Electives	Elective	2
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BIOL 3215K	Cell Biology (minimum grade of C)	4
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Program Requirements	Elective (minimum grade of C)	3
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UTCH 2105	Knowing and Learning in Mathematics and Science (minimum grade of C)	3
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UTCH 3215	Research Methods (minimum grade of C)	3
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Credit Hours		15
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Spring

Program Electives	Organismal Elective (minimum grade of C)	4
Social Studies	World Culture	3
BIOL 3217K	Ecology (minimum grade of C)	4
Program Electives	BIOL Cell/Molecular Senior Elective (minimum grade of C)	4
UTCH 3205	Classroom Interactions (minimum grade of C)	3
Credit Hours		18

Fourth Year**Fall**

BIOL 4795	Capstone Senior Seminar (minimum grade of C)	2
Program Electives	BIOL Ecology/Evolution Senior Elective (minimum grade of C)	4
HIST 2111 or HIST 2112	U. S. History to 1865 or U. S. History since 1865	3
POLS 1101	American Government	3
UTCH 4205	Inquiry-Based Instruction (minimum grade of C)	3
Credit Hours		15

Spring

SPED 4115	Teaching Math and Science to Exceptional Learners (minimum grade of B; see note below)	2
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There is a recent rule change for certification from the GaPSC. As of July 1, 2019, students must make a B or higher in the Exceptional Children's course. The course could be any of the following depending on your major: SPED 2256, EDCI 6228, KINS 4245, SPED 4115, PHED 6219. This rule change will not affect your graduation but you cannot become a certified educator with the state of Georgia until you receive the grade of B or higher in this course.

UTCH 4485	Student Teaching	9
UTCH 4795	Student Teaching Seminar (minimum grade of C)	1

Credit Hours		12
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Total Credit Hours		123
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cqtl.columbusstate.edu/). For a list of current admission requirements, go to <https://cqtl.columbusstate.edu/teacher-education.php>.

Additional Program Requirements

Students must receive a grade of "C" or better for all classes in Areas D, F, G, and H. Classes with grades lower than a "C" cannot be used to satisfy prerequisite requirements for courses required in the major.

To complete a degree in biology, students must obtain a minimum overall grade point average of 2.0 in all science courses applied to graduation.

For teacher certification, students must obtain a minimum overall and CSU grade point average of 2.5.

Prior to the student teaching semester, students must meet all requirements for admission to Student Teaching. For a list of current requirements, go to <https://cqtl.columbusstate.edu/student-teaching.php>.

To be recommended for teacher certification, students must pass the GACE Biology Test I and Test II (for additional information on the GACE, go to <https://gace.ets.org/>).

¹ MATH 1113 Pre-Calculus has 4 credits. Count 3 credits in Mathematics and Quantitative Skills and 1 credit in Field of Study.

² ITDS 2125 Historical Perspectives on the Philosophy of Science and Mathematics is recommended in Arts, Humanities and Ethics. If not taken in Arts, Humanities and Ethics, it can be taken for Program Requirements.

Admission Requirements

In order to declare a major in biology, a student is required to have an overall GPA of 2.5. During the sophomore year, students intending to complete a teacher education program make formal application to the teacher education program. Normally, this occurs after the student has completed three semesters of full-time course work. Application is made to the COEHP Center for Quality Teaching and Learning (<https://>