

# EDUCATION: SECONDARY EDUCATION, BIOLOGICAL SCIENCES (BS)

Degree: Bachelor of Science  
Major: Biological Sciences  
Concentration: Biology, Secondary Education  
Program Code: 3412

## About This Major . . .

The Biology program offers coursework, in conjunction with the Center for Teacher Education, leading to licensure in secondary education science. Graduates of the program can teach in the state of Colorado or use their teaching expertise in other careers. After completing foundation sciences classes in Biology, Chemistry, Physics and Geology, students choose 10 hours of upper level Biology course work, in consultation with their advisor.

The secondary licensure program provides teacher education candidates with broad content knowledge in science and prepares them as teachers for grades 7 through 12. A minimum of 75 credit hours of Essential Learning and content area coursework must be completed with a minimum GPA of 2.80 before a candidate may apply for admission to the Center for Teacher Education secondary licensure program. Please see the Teacher Education Admission Packet for further information on admissions criteria. EDUC 115, What It Means to be an Educator, and EDUC 215, Teaching as a Profession, must be taken before applying to the program.

Important information for this degree:

- 2.80 cumulative GPA or higher required in all CMU coursework.
- All EDUC prefix courses must be completed with a grade of 'B' or better.
- Students must pass the PRAXIS II exam in the content area prior to beginning the internship. Also, all other coursework toward the degree must be successfully completed prior to the internship.
- A grade of 'C' or better must be earned in all required courses, unless otherwise stated.

For more information on what you can do with this major, visit Career Services' What to Do with a Major? (<https://www.coloradomesa.edu/career/students/explore/major.html>) resource.

All CMU baccalaureate graduates are expected to demonstrate proficiency in specialized knowledge/applied learning, quantitative fluency, communication fluency, critical thinking, personal and social responsibility, and information literacy. In addition to these campus-wide student learning outcomes, graduates of this major will be able to:

1. Biological Sciences Outcome 1: Utilize the scientific approach to address novel questions and problems through the development of hypotheses, design of experiments, collection of data, analysis of data, and interpretation of results. (Quantitative Fluency/Applied Learning)
2. Biological Sciences Outcome 2: Identify, examine, evaluate and discuss the scientific literature. (Critical Thinking)

3. Biological Sciences Outcome 3: Articulate biological principles and ideas effectively, both in written and oral form. (Communication Fluency)
4. Teacher Education Outcome 1: Demonstrate mastery of major area's content knowledge and pedagogical strategies through fieldwork with learners in professional settings. (Specialized Knowledge/Applied Learning)
5. Teacher Education Outcome 2: Design and establish a safe, inclusive, and respectful learning environment for a diverse population of students. (Specialized Knowledge/Applied Learning)
6. Teacher Education Outcome 3: Plan and deliver effective instruction to students, based on research-based pedagogical practices. (Communication Literacy/Information Literacy)
7. Teacher Education Outcome 4: Collect and analyze student assessment data and use results to inform planning and instruction. (Quantitative Fluency)
8. Teacher Education Outcome 5: Demonstrate professionalism through ethical conduct, reflection, and leadership. (Personal and Social Responsibility)

## Requirements

Each section below contains details about the requirements for this program. Select a header to expand the information/requirements for that particular section of the program's requirements.

**To print or save an overview of this program's information, including the program description, learning outcomes, requirements, suggested course sequencing (if applicable), and advising and graduation information, scroll to the bottom of the left-hand navigation menu and select 'Print Options.'** This will give you the options to either 'Send Page to Printer' or 'Download PDF of This Page.' The 'Download PDF of This Page' option prepares a much more concise presentation of all program information. The PDF is also printable and may be preferable due to its brevity.

## Institutional Degree Requirements

The following institutional degree requirements apply to all CMU baccalaureate degrees. Specific programs may have different requirements that must be met in addition to institutional requirements.

- 120 semester hours minimum.
- Students must complete a minimum of 30 of the last 60 hours of credit at CMU, with at least 15 semester hours in major discipline courses numbered 300 or higher.
- 40 upper-division credits (an alternative credit limit applies to the Bachelor of Applied Science degree).
- 2.00 cumulative GPA or higher in all CMU coursework.
- A course may only be used to fulfill one requirement for each degree/certificate.
- No more than six semester hours of independent study courses can be used toward the degree.
- Non-traditional credit, such as advanced placement, credit by examination, credit for prior learning, cooperative education and internships, cannot exceed 30 semester credit hours for a baccalaureate degree. A maximum of 15 of the 30 credits may be for cooperative education, internships, and practica.
- Pre-collegiate courses (usually numbered below 100) cannot be used for graduation.

- Capstone exit assessment/projects (e.g., Major Field Achievement Test) requirements are identified under Program-Specific Degree Requirements.
- The Catalog Year determines which program sheet and degree requirements a student must fulfill in order to graduate. Visit with your advisor or academic department to determine which catalog year and program requirements you should follow.
- See "Requirements for Undergraduate Degrees and Certificates" in the catalog for a complete list of graduation requirements.

### Specific to this degree:

- 2.80 cumulative GPA or higher required in all CMU coursework.

## Essential Learning Requirements

(31 semester hours, must earn a grade of "C" or better in each course, unless otherwise noted.)

See the current catalog for a list of courses that fulfill the requirements below. If a course is an Essential Learning option and a requirement for your major, you must use it to fulfill the major requirement and make a different selection for the Essential Learning requirement.

Code	Title	Semester Credit Hours
<b>English</b> <sup>1</sup>		
ENGL 111	English Composition I-GTCO1	3
ENGL 112	English Composition II-GTCO2	3
<b>Mathematics</b> <sup>2</sup>		
MATH 113	College Algebra-GTMA1 (or higher) <sup>3</sup>	3
<b>History</b>		
Select one History course		3
<b>Humanities</b>		
Select one Humanities course		3
<b>Social and Behavioral Sciences</b>		
PSYC 233	Human Growth and Development-GTSS3 <sup>4</sup>	3
Select one Social and Behavioral Sciences course		3
<b>Fine Arts</b>		
Select one Fine Arts course		3
<b>Natural Sciences</b> <sup>5</sup>		
BIOL 105 & 105L	Attributes of Living Systems-GTSC1 and Attributes of Living Systems Laboratory-GTSC1	4
One of the following courses:		3
ENVS 101	Introduction to Environmental Science-GTSC2	
GEOL 103	Weather and Climate-GTSC2	
GEOL 104	Oceanography-GT-SC2	
GEOL 105	Geology of Colorado-GTSC2	
PHYS 101	Elementary Astronomy-GTSC2	
Total Semester Credit Hours		31

<sup>1</sup> 6 semester hours, must receive a grade of "B" or better and must be completed by the time the student has 60 semester hours.

<sup>2</sup> 3 semester hours, must receive a grade of "C" or better, must be completed by the time the student has 60 semester hours.

<sup>3</sup> MATH 113 is 4 credit hour course. 3 credits apply to the Essential Learning requirements and one credit applies to the required related study area.

<sup>4</sup> Must receive a grade of "B" or better.

<sup>5</sup> 7 semester hours, one course must include a lab, must be completed with a grade of "C" or better.

## Other Lower Division Requirements

Must earn a grade of "C" or better in each course, unless otherwise noted.

Code	Title	Semester Credit Hours
<b>Wellness Requirement</b>		
KINE 100	Health and Wellness	1
Select one Activity course		1
<b>Essential Learning Capstone</b> <sup>1</sup>		
ESSL 290	Maverick Milestone	3
ESSL 200	Essential Speech	1
Total Semester Credit Hours		6

<sup>1</sup> Essential Learning Capstone must be taken after completion of the Essential Learning English and Mathematics requirements, and when a student has earned between 45 and 75 hours.

## Foundation Courses

(13 semester hours, must pass all courses with a grade of 'C' or higher.)

Code	Title	Semester Credit Hours
CHEM 121	Principles of Chemistry-GTSC1 <sup>1</sup>	4
CHEM 121L	Principles of Chemistry Laboratory-GTSC1 <sup>1</sup>	1
CHEM 122	Principles of Organic Chemistry-GTSC1 <sup>1</sup>	4
CHEM 122L	Principles of Organic Chemistry Laboratory-GTSC1 <sup>1</sup>	1
STAT 200	Probability and Statistics-GTMA1	3
Total Semester Credit Hours		13

<sup>1</sup> A higher-level subject may be taken in the same category with advisor approval.

## Program Specific Degree Requirements

(40 semester hours, must pass all courses with a grade of "C" or higher and maintain a 2.80 cumulative GPA or higher in coursework in this area.)

Code	Title	Semester Credit Hours
<b>Core Courses</b>		
BIOL 106 & 106L	Principles of Animal Biology and Principles of Animal Biology Laboratory	4
BIOL 107 & 107L	Principles of Plant Biology and Principles of Plant Biology Laboratory	4
BIOL 385	Nature and Philosophy of Science	3
BIOL 483	Senior Thesis	2

**Required Related Study Area**

MATH 113	College Algebra-GTMA1	1
One of the following sets of courses:		4
GEOL 111 & 111L	Principles of Physical Geology-GTSC1 and Principles of Physical Geology Laboratory-GTSC1	
GEOL 113 & 113L	Field-Based Introduction to Physical Geology-GTSC1 and Field-Based Introduction to Physical Geology Laboratory-GTSC1	
GEOL 112 & 112L	Principles of Historical Geology-GTSC1 and Principles of Historical Geology Laboratory-GTSC1	4
PHYS 111 & 111L	General Physics-GTSC1 and General Physics Laboratory-GTSC1	5
PHYS 112 & 112L	General Physics-GTSC1 and General Physics Laboratory-GTSC1	5

**Biology Electives**

Select 8 semester hours of upper division BIOL courses:	8
<b>Total Semester Credit Hours</b>	<b>40</b>

**Secondary Education Requirements**

(29 semester hours, must pass all EDUC courses with a grade of "B" or higher.)

Program Requirements: ENGL 111, ENGL 112, PSYC 233, EDUC 115, and EDUC 215 (all with a grade of B or better) and formal acceptance to the Teacher Education Program.

Code	Title	Semester Credit Hours
EDUC 115	What It Means To Be An Educator (8 field experience hours)	1
EDUC 215	Teaching as a Profession (12 field experience hours)	1
EDUC 342	Pedagogy and Assessment: Secondary and K-12 (20 field experience hours)	3
EDUC 343	Teaching to Diversity (20 field experience hours)	3
EDUC 442	Integrating Literacy Across the Curriculum: Secondary and K-12 Art (60 field experience hours)	3
EDUC 475	Classroom Management for K-12 Educators	1
EDUC 497	Content Methodology Practicum (80 field experience hours)	3
EDUC 497D	Methods of Teaching Secondary Science <sup>1</sup>	2
EDUC 499G	Teaching Internship and Colloquia: Secondary (600 field experience hours)	12
Praxis II Exam Passed		
<b>Total Semester Credit Hours</b>		<b>29</b>

<sup>1</sup> This course is only offered in the fall semester. It may be taken with either the 300-level or 400-level EDUC courses but must be taken before the student teaching semester.

All EDUC prefix courses listed above must be completed with a grade of 'B' or better to progress through the program sequence. Students must PASS the PRAXIS II exam in the content area prior to commencing

the internship. Also, ALL other coursework toward the degree must be successfully completed prior to the internship.

**General Electives**

All college level courses appearing on your final transcript, not listed above that will bring your total semester hours to 120 hours. 1 semester hour. Must earn a 'C' or better.

Code	Title	Semester Credit Hours
Select elective		1
<b>Total Semester Credit Hours</b>		<b>1</b>

**Suggested Course Plan**

First Year		Semester Credit Hours
<b>Fall Semester</b>		
BIOL 105 & 105L	Attributes of Living Systems-GTSC1 and Attributes of Living Systems Laboratory-GTSC1	4
ENGL 111	English Composition I-GTCO1	3
CHEM 121 & 121L	Principles of Chemistry-GTSC1 and Principles of Chemistry Laboratory-GTSC1	5
MATH 113	College Algebra-GTMA1	4
	<b>Semester Credit Hours</b>	<b>16</b>
<b>Spring Semester</b>		
BIOL 106 & 106L	Principles of Animal Biology and Principles of Animal Biology Laboratory	4
ENGL 112	English Composition II-GTCO2	3
CHEM 122 & 122L	Principles of Organic Chemistry-GTSC1 and Principles of Organic Chemistry Laboratory-GTSC1	5
STAT 200	Probability and Statistics-GTMA1	3
EDUC 115	What It Means To Be An Educator	1
	<b>Semester Credit Hours</b>	<b>16</b>
<b>Second Year</b>		
<b>Fall Semester</b>		
BIOL 107 & 107L	Principles of Plant Biology and Principles of Plant Biology Laboratory	4
PHYS 111 & 111L	General Physics-GTSC1 and General Physics Laboratory-GTSC1	5
PSYC 233	Human Growth and Development-GTSS3	3
ESSL 290	Maverick Milestone	3
ESSL 200	Essential Speech	1
	<b>Semester Credit Hours</b>	<b>16</b>
<b>Spring Semester</b>		
Select one of the following:		4
GEOL 111 & 111L	Principles of Physical Geology-GTSC1 and Principles of Physical Geology Laboratory-GTSC1	
GEOL 113 & 113L	Field-Based Introduction to Physical Geology-GTSC1 and Field-Based Introduction to Physical Geology Laboratory-GTSC1	
PHYS 112 & 112L	General Physics-GTSC1 and General Physics Laboratory-GTSC1	5
ENVS 101 or GEOL 103 or GEOL 104 or GEOL 105 or PHYS 101	Introduction to Environmental Science-GTSC2 or Weather and Climate-GTSC2 or Oceanography-GTSC2 or Geology of Colorado-GTSC2 or Elementary Astronomy-GTSC2	3
EDUC 215	Teaching as a Profession	1
KINA Activity		1
KINE 100	Health and Wellness	1
	<b>Semester Credit Hours</b>	<b>15</b>

**Third Year****Fall Semester**

Essential Learning - Social and Behavioral Sciences	3
GEOL 112 Principles of Historical Geology-GTSC1 & 112L and Principles of Historical Geology Laboratory-GTSC1	4
Upper Division Biology Elective	4
Essential Learning - Humanities	3
Semester Credit Hours	14

**Spring Semester**

EDUC 342 Pedagogy and Assessment: Secondary and K-12	3
EDUC 343 Teaching to Diversity	3
BIOL 385 Nature and Philosophy of Science	3
Upper Division Biology Elective	4
Essential Learning - History	3
Semester Credit Hours	16

**Fourth Year****Fall Semester**

BIOL 483 Senior Thesis	2
Elective	1
Essential Learning - Fine Arts	3
EDUC 442 Integrating Literacy Across the Curriculum: Secondary and K-12 Art	3
EDUC 475 Classroom Management for K-12 Educators	1
EDUC 497 Content Methodology Practicum	3
EDUC 497D Methods of Teaching Secondary Science	2
Semester Credit Hours	15

**Spring Semester**

EDUC 499G Teaching Internship and Colloquia: Secondary	12
Semester Credit Hours	12
Total Semester Credit Hours	120

- Submit the "Intent to Graduate" form to the Registrar's Office to officially declare the intended graduation date and commencement ceremony plans.
- Register for all needed courses and complete all requirements for each degree sought.

Submission deadlines and commencement details can be found at <http://www.coloradomesa.edu/registrar/graduation.html>.

If a student's petition for graduation is denied, it will be her/his responsibility to consult the Registrar's Office regarding next steps.

## Advising and Graduation

### Advising Process and DegreeWorks

Documentation on the pages related to this program is intended for informational purposes to help determine what courses and associated requirements are needed to earn a degree. The suggested course sequencing outlines how students could finish degree requirements. Some courses are critical to complete in specific semesters, while others may be moved around. Meeting with an academic advisor is essential in planning courses and altering the suggested course sequencing. It is ultimately the student's responsibility to understand and fulfill the requirements for her/his intended degree(s).

DegreeWorks is an online degree audit tool available in MAVzone. It is the official record used by the Registrar's Office to evaluate progress towards a degree and determine eligibility for graduation. Students are responsible for reviewing their DegreeWorks audit on a regular basis and should discuss questions or concerns with their advisor or academic department head. Discrepancies in requirements should be reported to the Registrar's Office.

## Graduation Process

Students must complete the following in the first two months of the semester prior to completing their degree requirements:

- Review their DegreeWorks audit and create a plan that outlines how unmet requirements will be met in the final semester.
- Meet with their advisor and modify their plan as needed. The advisor must approve the final plan.