

# BIOLOGY 3+2 PROGRAM, BACHELOR OF SCIENCE/ MASTER OF SCIENCE

A feature of the Biology MS program is the 3+2 plan which gives qualified advanced-level undergraduate students the opportunity to simultaneously pursue both the Baccalaureate (BS) and Master of Science (MS) degrees. With this plan, students are moved quickly toward expanding their academic and scientific horizons based on the student's abilities and personal motivation. Students in the 3+2 plan are expected to successfully complete the requirements for both the BS and MS degrees by the end of their fifth year in college.

Specific requirements for the 3+2 program are included in the Biology MS description of the *College of Science and Mathematics*, undergraduate programs section of this catalog.

## Specific Admission Requirements

Students are simultaneously awarded both the BS and MS degrees in five years, thus shortening the normal time to receive both degrees from six years to five years. They must apply and be admitted into the Biology MS program by the Spring semester of their junior year (preferred) or by the start of the Fall semester of the senior year and meet the course requirements listed below. Students applying to the 3+2 plan must have a minimum 3.0 overall GPA and a minimum 3.25 GPA in their biology coursework.

Prior to being admitted to the Biology MS 3+2 plan, students must have completed or be in the process of taking the following courses:

Course	Title	Credits
BIOL 301 & 301L	General Microbiology and General Microbiology Lab	5
BIOL 350	Mendelian and Population Genetics	2.00
BIOL 351	Molecular Biology & Genetics	2.00
CHEM 302 & 302L	Organic Chemistry II and Organic Chemistry Lab II	5
PHYS 202 & 202L	Principles Of Physics II (GT-SC2) and Principles Of Physics II Lab (GT-SC1)	4
MATH 156 or MATH 221	Introduction to Statistics (GT-MA1) Applied Calc: An Intuitive Approach (GT-MA1)	3-4

The application file for admission to the 3+2 plan must include:

1. A completed Biology 3+2 online application;
2. A CSU Pueblo transcript;
3. Two letters of recommendation;
4. A letter of support from a CSU-Pueblo Faculty mentor
5. A letter of intent;
6. GRE scores are optional and may be used to supplement the application

## Specific Program Requirements

Students in the 3+2 BS/MS program must complete:

- The requirements for a BS in Biology including specific concentration courses.

- The requirements for the MS in Biology including thesis or non-thesis options.

Students may take up to 12 graduate credits in "stacked" (400/500) courses, with the permission of the Biology graduate committee and Program Director.

The 3+2 degree plan has the following requirements:

Course	Title	Credits
General Education <sup>1</sup>		27
BS Biology Core		30
BS Biology Support Courses		32
BS Biology Concentration		19
MS Biology Requirements		30-34
<b>Total Credits</b>		<b>138-142</b>

<sup>1</sup> CID 103 and MATH 103 are required general education courses for all Biology majors.

### Undergraduate Requirements

#### Specific Core Requirements

Course	Title	Credits
BIOL 171	First Year Seminar	1
BIOL 181 & 181L	College Biology I/Organismal Bio (GT-SC2) and College Biology I/Organismal Bio Lab (GT-SC1)	4
BIOL 182 & 182L	College Biology II/Cellular Biology (GT-SC2) and College Biology II/Cellular Bio Lab (GT-SC1)	4
BIOL 312 & 312L	Cell Biology and Cell Biology Laboratory	4
BIOL 350	Mendelian and Population Genetics	2
BIOL 351	Molecular Biology & Genetics	3
BIOL 352	Evolutionary Biology and Ecology	3
BIOL 493	Seminar	1
Select one of the following two organismal courses:		4
BIOL 201 & 201L	Botany (GT-SC2) and Botany Laboratory (GT-SC1)	4
BIOL 202 & 202L	Zoology and Zoology Laboratory	4
Select one of the following four microbiology or physiology courses:		4
BIOL 401 & 401L	Microbiology and Microbiology Laboratory	4
BIOL 412 & 412L	Advanced Cellular Biology and Advanced Cellular Biology Lab	4
BIOL 413 & 413L	Plant Physiology and Plant Physiology Lab	4
BIOL 414 & 414L	Vertebrate Physiology and Vertebrate Physiology Lab	4
<b>Total Credits</b>		<b>30</b>

Select from the following BS Biology concentrations:

- Basic Biology Concentration (<https://catalog.csupueblo.edu/college-of-science-technology-engineering-and-mathematics/biology/biology-bs-basic-biology-concentration/>)
- Biology/Chemistry Double Major Concentration (<https://catalog.csupueblo.edu/college-of-science-technology-engineering->

and-mathematics/biology/biology-bs-biology-chemistry-double-major-concentration/)

- Biomedical Sciences Concentration (<https://catalog.csupueblo.edu/college-of-science-technology-engineering-and-mathematics/biology/biology-bs-biomedical-sciences-concentration/>)
- Cellular & Molecular Biosciences Concentration (<https://catalog.csupueblo.edu/college-of-science-technology-engineering-and-mathematics/biology/biology-bs-cellular-molecular-biosciences-concentration/>)
- Environmental Biosciences Concentration (<https://catalog.csupueblo.edu/college-of-science-technology-engineering-and-mathematics/biology/biology-bs-environmental-biosciences-concentration/>)
- Secondary Certification Concentration (<https://catalog.csupueblo.edu/college-of-science-technology-engineering-and-mathematics/biology/biology-bs-biology-secondary-certification-concentration/>)

### Graduate Requirements

On Campus Program

### Specific Core Requirements

Course	Title	Credits
<b>On campus students will take one of the following courses:</b>		
BIOL 512 & 512L	Advanced Cellular Biology and Advanced Cellular Biology Lab	4
BIOL 514 & 514L	Vertebrate Physiology and Vertebrate Physiology Lab	4
BIOL 540 & 540L	Advanced Biotechniques and Advanced Biotechniques Lab	4
BIOL 543 & 543L	Limnology and Limnology Lab	4
BIOL 553 & 553L	Ecology and Ecology Field Studies	4
<b>Total Credits</b>		<b>4</b>

### Thesis Option

Course	Title	Credits
BIOL 510	Foundations in Graduate Studies	3
BIOL 589	Thesis Defense	1.00
BIOL 593	Seminar	1
BIOL 599	Thesis Research	6
MATH 550	Statistical Methods	3.00
Electives		12
<b>Total Credits</b>		<b>26</b>

### Internship Option

Course	Title	Credits
BIOL 510	Foundations in Graduate Studies	3
BIOL 588	Internship Seminar	1.00
BIOL 593	Seminar	1
BIOL 598	Internship	4
MATH 550	Statistical Methods	3.00
Electives		16
<b>Total Credits</b>		<b>28</b>

Online Program

Non-Thesis Option

Course	Title	Credits
BIOL 505	Foundations in Graduate Studies	3
BIOL 548	Biological Statistics	3
BIOL 559	Comprehensive Exam	1
BIOL 568	Evolution	3
BIOL 577	Current Issues in Biology	1
Electives		23
<b>Total Credits</b>		<b>34</b>

### Electives

Elective courses are select from the courses listed below. Others may be used, with permission, as new courses are added or from other areas of student (e.g. CHEM and WANR).

Course	Title	Credits
BIOL 502 & BIOL 503L	Immunology and Virology Lab	4
BIOL 503	Virology	3.00
BIOL 512 & 512L	Advanced Cellular Biology and Advanced Cellular Biology Lab	4
BIOL 513 & 513L	Plant Physiology and Plant Physiology Lab	4
BIOL 514 & 514L	Vertebrate Physiology and Vertebrate Physiology Lab	4
BIOL 521 & 521L	Histology and Histology Lab	4
BIOL 532 & 532L	Developmental Biology and Developmental Biology Lab	4
BIOL 540 & 540L	Advanced Biotechniques and Advanced Biotechniques Lab	4
BIOL 541 & 541L	Freshwater Invertebrate Zoology and Freshwater Invertebrate Zoology Lab	4
BIOL 543 & 543L	Limnology and Limnology Lab	4
BIOL 552 & 552L	Advanced Microscopy and Advanced Microscopy Lab	4
BIOL 553 & 553L	Ecology and Ecology Field Studies	4
BIOL 554	Behavioral Ecology	3.00
BIOL 561	Applied Geospatial Technology (GIS/GPS)	3.0
BIOL 562	Environmental Policy & Management	3.00
BIOL 565	Environmental Toxicology	3.00
BIOL 579 & 579L	Ichthyology and Ichthyology Laboratory	3
BIOL 581 & 581L	Entomology and Entomology Lab	3
BIOL 582 & 582L	Herpetology and Herpetology Lab	3
BIOL 583 & 583L	Mammalogy and Mammalogy Lab	3
BIOL 584 & 584L	Ornithology and Ornithology Lab	3

BIOL 585 & 585L	Plant Taxonomy and Plant Taxonomy Lab	4
BIOL 586	Field Botany	3.00
BIOL 591	Special Topics	1-4
BIOL 595	Independent Study	1-4