

**ACCELERATED PROGRAM - B. S. IN BIOLOGY: INTEGRATIVE BIOLOGY
+ M. S. IN BIOLOGY**
Fall 2023 – Spring 2024

I. ACADEMIC FOUNDATIONS & DEGREE REQUIREMENTS

<i>Requirement</i>	<i>Course</i>	<i>Credits</i>	<i>Term</i>	<i>Year</i>	<i>Grade</i>
First Year Experience	FYE 100	4	_____	_____	_____
Effective Writing I	WRT 120	3	_____	_____	_____
Effective Writing II	WRT 2__ [^]	3	_____	_____	_____
Mathematics: Statistics	MAT 121 ⁺ or 125 ⁺	3	_____	_____	_____
Interdisciplinary (“I”)	_____	3	_____	_____	_____
Diverse Communities (“J”)	_____ [♥]	3	_____	_____	_____
Ethics (“ET”)	_____ [♥]	3	_____	_____	_____

Writing Emphasis (“W”) *Nine credits**, integrated across General Education & Major courses.

<u>BIO 211</u>	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
One at 300/400-level:	_____	_____	_____	_____	_____

Speaking Emphasis (“SE”) *Nine credits**, integrated across General Education & Major courses.

_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
One at 300/400-level:	_____	_____	_____	_____	_____

II. GENERAL EDUCATION DISTRIBUTIVE REQUIREMENTS

- Courses must be selected from the approved General Education list (see the [catalog](#)).
- Interdisciplinary (“I”) courses cannot also be a General Education distributive course.
- Biology majors fulfill their science requirements with CHE 103 and PHY 130/170.
- Distributive requirements can be simultaneously satisfied with other degree requirements, see some examples[♦].

A. Humanities (6 credits): E.g., Literature (LIT/CLS), History (HIS), Philosophy (PHI)
Courses must be selected from two different subject areas.

_____	3	_____	_____	_____
_____	3	_____	_____	_____

B. Behavioral and Social Sciences (6 credits): E.g., Psychology (PSY), Sociology (SOC), Anthropology (ANT), Political Science (PSC), Geography (GEO), Economics (ECO)
Courses must be selected from two different subject areas.

Note: Students taking the MCAT should take PSY 100 and SOC 100.

_____	3	_____	_____	_____
_____	3	_____	_____	_____

C. Arts (3 credits): E.g., Art (ART), Art History (ARH), Dance (DAN), Film (FLM), Music (MHL, MTC), Theater (THA)

_____	3	_____	_____	_____
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III. DIRECTED ELECTIVES – 15 credits (to reach 120 total credits for the B.S. degree)

_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

IV. SUPPORTING COURSES (28 credits)

Calculus ⁺ *	MAT 145	3	_____	_____	_____
General Chemistry I	CHE 103	3	_____	_____	_____
General Chemistry I Lab	CRL 103	1	_____	_____	_____
General Chemistry II	CHE 104	3	_____	_____	_____
General Chemistry II Lab	CRL 104	1	_____	_____	_____
Organic Chemistry I	CHE 231	4	_____	_____	_____
Organic Chemistry I Lab	CRL 231	2	_____	_____	_____
Organic Chemistry II	CHE 232	3	_____	_____	_____
General Physics I **	PHY 130	4	_____	_____	_____
General Physics II	PHY 140	4	_____	_____	_____

V. BIOLOGY COURSES (42 credits; 30 credits taken at the undergraduate level, 12 credits taken at graduate level are applied to the B.S.) Must have 3.00 GPA for graduate admission.

A. Required Core Courses (16 credits)

General Biology I ***	BIO 110	4	_____	_____	_____
General Biology II ***	BIO 111	4	_____	_____	_____
Genetics ***	BIO 210	3	_____	_____	_____
Genetics Lab ***	BIO 210L	1	_____	_____	_____
Cell Biology ***	BIO 211	4	_____	_____	_____

B. Other Required Courses (3 credits)

General Ecology ***	BIO 270	3	_____	_____	_____
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C. Biology Electives ^Ω (11 credits)

_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

D. Graduate Biology Core Courses (12 graduate credits, see below)

VI. GRADUATE COURSES

A. Core courses (12 credits)

BIO 510: Graduate Seminar in Biology	3	_____	_____	_____
BIO 511: Experimental Design and Analysis	3	_____	_____	_____
BIO 520: Topics & Methods in Cellular, Microbial, and Molecular Biology	3	_____	_____	_____
BIO 521: Topics & Methods in Ecology, Evolution, and Organismal Biology	3	_____	_____	_____

B. Electives ^ξ (15 credits)

_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

	_____	_____	_____	_____	_____
	_____	_____	_____	_____	_____
	_____	_____	_____	_____	_____

C. *Research and Capstone* (3 credits)

Directed Research in Biology BIO 591 ^Δ

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Notes and Requirements

Students should begin discussing research topics with prospective faculty advisors during the 3rd year in preparation for graduate courses in during their 4th year.

Credit requirements: B.S.: 120 credits; M.S.: 30 credits. Twelve credits taken at the graduate level are also applied to the B.S. degree. Therefore the total for both degrees is 138 credits.

♣ The second (200-level) WRT course is chosen from WRT 200, 204, 205, 206, 208, or 220.

♥ The Diverse Communities (“J”) course and the Ethics (“ET”) courses can be satisfied through another requirement (e.g., Interdisciplinary or Distributive) as long as the course carries the appropriate attribute(s). *Note:* Credits are not duplicated such that if a course satisfies two requirements, those credits must be made up via directed electives (the minimum total credits for a B.S. degree is 120).

♣ All students must take at least 9 credits of Writing Emphasis courses and 9 credits of Speaking Emphasis courses. Students who enter WCU with 40-70 transfer credits only need 6 credits of each; students who enter with >70 transfer credits only need 3 credits of each. **All students must take at least 3 credits of Writing Emphasis and 3 credits of Speaking Emphasis at the 300-400 level.**

♦ Students should think about how requirements can be simultaneously satisfied. As examples: LNC 110 is a Humanities distributive that satisfies the Ethics requirement; PHI 180 is a Humanities distributive that satisfies the Diverse Communities & Ethics requirements; LIT 165 is a Humanities distributive that is also Writing Emphasis; PSC 101 is a Behavioral & Social Science distributive that satisfies the Diverse Communities requirement.

+ All student will need to complete the Math Placement Exam before they can enroll in MAT courses. For information, please visit the link below. Please direct any questions to mathexam@wcupa.edu. <https://www.wcupa.edu/sciences-mathematics/mathematics/mathematicsPlacement.aspx>

* The Biology department recommends MAT 145 (Calculus for the Life Sciences; 3 credits) or MAT 161 (Calculus I; 4 credits). MAT 143 (Brief Calculus; 3 credits) is also acceptable. You must meet the necessary pre-requisites or obtain a minimum score on the Math Placement Exam to enroll in a calculus class. Visit the Math Department website to take the exam. If you receive a score of 3 or lower on the placement exam, you must take MAT 115 (Algebra, Functions, and Trigonometry) or MAT 131 (Precalculus) as preparation for Calculus (MAT 143 or MAT 145). If a student scores a 2 or lower, they will need to take MAT Q30 before they can enroll in MAT 115 or MAT 131. Students can repeat the mathematics assessment to improve their score. If you receive a score of 4 or above, you can enroll directly into MAT 143 or MAT 145. You must score a 5 to enroll into MAT 161 or take the pre-requisite of MAT 131.

** The recommended Physics sequence is PHY 130 & PHY 140. Students may substitute the PHY 170 & PHY 180 sequence, but PHY 130 may not be used as a prerequisite for PHY 180 and PHY 170 may not be used as a prerequisite for PHY 140.

*** Course must be passed with a "C-" or better.

Ω - Biology electives are selected from BIO 214, 275, 277, or BIO courses at or above the 300 level, except BIO 307. Because of content overlap, students may take either BIO 468 or BIO 469 as an elective, but not both.

Δ - To complete BIO 591 successfully, the student must present the results of the project in an open seminar. In addition, the student must pass a written comprehensive examination prepared by the student's advisory committee. Students who fail this examination will not receive a grade for this capstone course.

ξ – Any other 500-level BIO course except BIO 591. If a course is offered at both the 400 and 500 levels, the student must take the 500-level course. No more than 6 credits of 400-level courses may be counted toward the M.S. degree. With prior departmental approval, up to 6 credits of graduate course work from another department or university may be applied toward the M.S. degree. BIO 535, 536, and 537 may be repeated for credit provided the topic is different.

Suggested Sequence for Accelerated B.S. + M.S. Biology Majors
Integrative Biology Concentration
 Fall 2023 – Spring 2024

Semester #1 (15 credits)	Semester #2 (17 credits)
_____ FYE 100 (4) _____ WRT 120 (3) _____ BIO 110 (4) _____ CHE 103 (3) & CRL 103 (1)	_____ WRT 2__ (3) _____ BIO 111 (4) _____ CHE 104 (3) & CRL 104 (1) _____ MAT 125 or MAT 121 (3) _____ Gen Ed Distributive: Behavioral & Social Science (3)
Semester #3 (16 credits)	Semester #4 (16-17 credits)
_____ BIO 210 (3) & BIO 210L (1) _____ CHE 231 (4) & CRL 231 (2) _____ Gen Ed Distributive: Humanities & Ethics Course (ET) (3) _____ Diverse Communities Course (J) (3)	_____ BIO 211 (4) _____ CHE 232 (3) _____ Gen Ed Distributive: Arts (3) _____ Gen Ed Distributive: Behavioral & Social Science (3) _____ MAT 145 (3) or MAT 143 (3) /161 (4)
Semester #5 (16 credits)	Semester #6 (16 credits)
_____ BIO 270 (3) _____ BIO Elective (3) _____ PHY 130 (4) _____ Gen Ed Distributive: Humanities (3) _____ Directed Elective (W) (3)	_____ BIO Elective (3) _____ BIO Elective (3) _____ PHY 140 (4) _____ Interdisciplinary Course (I) (3) _____ Speaking Emphasis Course (SE) (3)
Semester #7 [^] (14 credits)	Semester #8 (12 credits)
_____ BIO 510 (3) _____ BIO 520 (3) _____ Upper-level Directed Elective (W) (3) _____ Directed Elective (2) _____ BIO Elective (3) (Graduate)	_____ BIO 511 (3) _____ BIO 521 (3) _____ Directed Elective (3) _____ Directed Elective (3)
Semester #9 (9 credits)	Semester #10 (9 credits)
_____ BIO Elective (3) _____ BIO Elective (3) (Graduate) _____ BIO Elective (3) (Graduate)	_____ BIO Elective (3) (Graduate) _____ BIO Elective (3) (Graduate) _____ BIO 591 [^] (3)

All required 200 level Biology courses should be completed by the end of Semester #5.

Students should take Statistics (MAT 121 or 125) in the first year.

All students must take at least 9 credits of Writing Emphasis courses and 9 credits of Speaking Emphasis courses. Students who enter WCU with 40-70 transfer credits only need 6 credits of each; students who enter with >70 transfer credits only need 3 credits of each. **All students must take at least 3 credits of Writing Emphasis and 3 credits of Speaking Emphasis at the 300-400 level.**