

**ACCELERATED PROGRAM - B. S. IN BIOLOGY: INTEGRATIVE BIOLOGY
+ M. S. IN BIOLOGY – THESIS OPTION**
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 | _____ | _____ | _____ |
|-------|---|-------|-------|-------|

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 | _____ | _____ | _____ |
|--------------------------------|---------|---|-------|-------|-------|

C. Biology Electives ^Ω (11 credits)

| | | | | |
|-------|-------|-------|-------|-------|
| _____ | _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ | _____ |

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

VI. GRADUATE COURSES ^Δ

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 [§] (9 credits)

| | | | | |
|-------|-------|-------|-------|-------|
| _____ | _____ | _____ | _____ | _____ |
|-------|-------|-------|-------|-------|

| | | | | | |
|--|---------|---|-------|-------|-------|
| | _____ | — | _____ | _____ | _____ |
| | _____ | — | _____ | _____ | _____ |
| <i>C. Research and Capstone</i> ^Σ (9 credits) | | | | | |
| Thesis Proposal | BIO 608 | 3 | | | |
| Thesis Research | BIO 609 | 3 | | | |
| Thesis and Defense | BIO 610 | 3 | | | |

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 enroll in BIO 608 (Thesis Proposal), students must have attained (completed) 75 credits with a minimum of 18 biology credits. Students must have a minimum cumulative GPA of 3.00 including a minimum GPA of 3.00 for biology courses. BIO 608 requires departmental permission to enroll; students must arrange a committee meeting prior to enrolling in BIO 608 (e.g., during their third year). Once admitted to the graduate program, graduate policies apply, including minimum GPA (3.00). *See the Graduate Catalog for further details.*

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.

Σ - A letter grade must be obtained for BIO 608 before the student can enroll in BIO 609. Likewise, a letter grade must be obtained for BIO 609 before the student can enroll in BIO 610.

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 2__ (3) |
| _____ | WRT 120 (3) | _____ | BIO 111 (4) |
| _____ | BIO 110 (4) | _____ | CHE 104 (3) & CRL 104 (1) |
| _____ | CHE 103 (3) & CRL 103 (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) | _____ | BIO 211 (4) |
| _____ | CHE 231 (4) & CRL 231 (2) | _____ | CHE 232 (3) |
| _____ | Gen Ed Distributive: Humanities & Ethics Course (ET) (3) | _____ | Gen Ed Distributive: Arts (3) |
| _____ | Diverse Communities Course (J) (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) |
| _____ | BIO Elective (3) | _____ | BIO Elective (3) |
| _____ | PHY 130 (4) | _____ | PHY 140 (4) |
| _____ | Gen Ed Distributive: Humanities (3) | _____ | Interdisciplinary Course (I) (3) |
| _____ | Directed Elective (W) (3) | _____ | Speaking Emphasis Course (SE) (3) |
| _____ | Semester #7 [^] (14 credits) | _____ | Semester #8 (12 credits) |
| _____ | BIO 510 (3) | _____ | BIO 511 (3) |
| _____ | BIO 520 (3) | _____ | BIO 521 (3) |
| _____ | Upper-level Directed Elective (W) (3) | _____ | Directed Elective (3) |
| _____ | Directed Elective (2) | _____ | Directed Elective (3) |
| _____ | BIO 608 [^] (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 609 (3) | _____ | BIO 610 (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.**