

ACCELERATED PROGRAM - B. S. IN BIOLOGY: ECOLOGY AND CONSERVATION CONCENTRATION + M. S. IN BIOLOGY

Fall 2020– Spring 2021

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 220</u>	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
<i>One at 300/400-level:</i>	_____	_____	_____	_____	_____

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

_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
<i>One at 300/400-level:</i>	_____	_____	_____	_____	_____

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 – 17 credits (to reach 120 total credits for the B.S. degree)

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

IV. SUPPORTING COURSES (28 credits)

Calculus **	MAT __	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 courses (21 credits)

General Biology ***	BIO 110	3	_____	_____	_____
General Botany ***	BIO 215	3	_____	_____	_____
General Zoology ***	BIO 217	3	_____	_____	_____
Cell Physiology ***	BIO 220	3	_____	_____	_____
Genetics ***	BIO 230	3	_____	_____	_____
General Ecology ***	BIO 270	3	_____	_____	_____
Biostatistical Applications	BIO 310	3	_____	_____	_____

B. Biology Ecology Electives (3 credits; must be selected from list below)

BIO214	General Microbiology	BIO453	Marine Mammals
BIO275	Field Botany	BIO454	Mycology
BIO277	Vertebrate Ecology	BIO466	Plant Physiology
BIO312	Marine Botany	BIO470	Population Biology
BIO313	Marine Biology	BIO471	Wetlands
BIO315	Terrestrial Ecosystem Ecology	BIO473	Conservation Biology
BIO377	Entomology	BIO474	Microbial Ecology
BIO387	Invertebrate Zoology	BIO475	Plant Communities
BIO409	Internship in Biological Sciences	BIO476	Freshwater Ecology
BIO412	Organic Evolution	BIO478	Plant Evolution
BIO415	Tropical Ecology and Conservation	BIO485	Systematic Botany
BIO435	Global Climate Change	BIO491	Special Problems in Biology

C. Ecology-related Electives (6 credits; must be selected under advisement from list below)

Department of Biology		Department of Earth & Space Science	
Any Biology Ecology Electives (above)		ESS 330	Introduction to Oceanography
BIO 457	Functional Animal Morphology	ESS 332	Advanced Oceanography
BIO 464	Microbial Physiology	ESS 336	Environmental Geology
BIO 468	Comparative Vertebrate Physiology	ESS 343	Geomorphology
		ESS 435	Remote Sensing
Department of Chemistry		ESS 439	Hydrogeology
CHE 321	Analytical Chemistry I	ESS 490	Fundamental of Soil
CHE 403	Chemistry of the Environment		
CHE 424	Advanced Analytical Chemistry	Department of Geography & Planning	
CRL 321	Experimental Analytical Chemistry I	GEO 214	Introduction to Planning
CRL 424	Advanced Analytical Chemistry Lab	GEO 225	Introduction to Maps & Remote Sensing
		GEO 230	Environmental Conservation & Sustainability
Department of Health		GEO 320	Land Use Planning
ENV 451	Environmental Toxicology	GEO 324	Introduction to GIS
ENV 462	Water Quality and Health	GEO 332	Environmental Crises
		GEO 336	Environmental Planning
Department of Psychology		GEO 338	Environmental Applications of GIS
PSY 335	Animal Behavior	GEO 341	Landscape Analysis
PSY 336	Animal Behavior Lab	GEO 401	Internet Mapping
PSY 490	Course Topics: Primate Behavior & Culture	GEO 402	Field Methods in Environmental Geography
ANT/PSY 230	Introduction to Primatology	GEO 424	GIS Applications

VI. GRADUATE COURSES ^Δ

A. Core courses (12 credits)

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

B. Electives [§] (9 credits)

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

C. Research and Capstone ^Σ (9 credits)

Thesis Proposal	BIO 608	3	_____	_____	_____
Thesis Research	BIO 609	3	_____	_____	_____
Thesis and Defense	BIO 610	3	_____	_____	_____

Notes and Requirements

The Accelerated B.S. + M.S. program is only open to thesis students. Students should begin discussing research topics with prospective faculty advisors during the 2nd year in preparation for application to the accelerated program during their 3rd 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.

Δ - To be considered for the accelerated program and 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). The accelerated program in biology is only open to thesis students. Any student wishing to switch out of the thesis option will be required to complete all requirements of the B.S. degree. 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

Ecology & Conservation Concentration

Fall 2020– Spring 2021

_____ _____ _____ _____ _____	Semester #1 (17 credits)	_____ _____ _____ _____ _____	Semester #2 (16 credits)
	FYE 100 (4) WRT 120 (3) BIO 110 (3) CHE 103/CRL 103 (3)/(1) MAT 121 or MAT 125 (3)		WRT 2__ (3) BIO 215 or 217 (3) CHE 104/CRL 104 (3)/(1) MAT 145 (3) or MAT 143/161 Gen Ed Distributive: Behavioral & Social Science (3)
_____ _____ _____ _____ _____	Semester #3 (15 credits)	_____ _____ _____ _____ _____	Semester #4 (15 credits)
	BIO 215 or 217 (3) CHE 231 (4) CRL 231 (2) Gen Ed distributive: Humanities & Ethics (ET) course (3) Diversity (J) elective (3)		BIO 220 (3) (W) BIO 270 (3) CHE 232 (3) Gen Ed distributive: Arts (3) Gen Ed distributive: Behavioral & Social Science (3)
_____ _____ _____ _____ _____	Semester #5 (16 credits)	_____ _____ _____ _____ _____	Semester #6 (16 credits)
	BIO 230 (3) BIO Ecology elective (3) PHY 130 (4) Gen Ed distributive: Humanities (3) Directed elective (3)		BIO 310 (3) Ecology-related elective (3) PHY 140 (4) Interdisciplinary (I) elective (3) Directed elective (3)
_____ _____ _____ _____ _____	Semester #7 [^] (14 credits)	_____ _____ _____ _____ _____	Semester #8 (15 credits)
	BIO 510 (3) BIO 520 (3) Directed elective (3) Directed elective (2) BIO 608 [^] (3)		Ecology-related elective (3) BIO 511 (3) BIO 521 (3) Directed elective (3) Directed elective (3)
_____ _____ _____	Semester #9 (9 credits)	_____ _____	Semester #10 (6 credits)
	BIO elective (3) (Graduate) BIO elective (3) (Graduate) BIO 609 (3)		BIO elective (3) (Graduate) 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.**