B. S. IN BIOLOGY: ECOLOGY AND CONSERVATION CONCENTRATION

Fall 2018 – Spring 2019

REQUIREMENT	COURSE	CREDITS	TERM	YEAR	GRADE
I. ACADEMIC FOUNDATIONS (18 credits)					
Effective Writing I	WRT 120	3	_____	_____	____
Writing II	WRT ___*	3	_____	_____	____
Statistics	MAT 121	3	_____	_____	____
Communication	SPK ___*	3	_____	_____	____
Diverse Communities ("J")	____	3	_____	_____	____
Interdisciplinary ("I")	____	3	_____	_____	____

II. LIBERAL ARTS DISTRIBUTIVE REQUIREMENTS (*Approved courses only*)

No course that carries the Interdisciplinary attribute ("I" course) may be used to fulfill any of these requirements, even if it carries a LIT, GEO, MHL, etc. prefix.

A. Approved courses in the **Humanities** (6 credits)
Select courses from at least 2 of the following areas.

Literature (LIT/CLS) History (HIS) Philosophy (PHI)

_____	3	_____	_____	____
_____	3	_____	_____	____

B. Approved courses in the **Behavioral and Social Sciences** (6 credits)
Select courses from at least 2 of the following areas.

Anthropology (ANT) Psychology (PSY) Sociology (SOC)
Economics (ECO) Geography (GEO) Government (PSC)

_____	3	_____	_____	____
_____	3	_____	_____	____

Students taking the MCAT should take at least one semester of psychology and one semester of sociology.

C. Approved courses in the **Arts** (3 credits)
Select a course in Art, Cinematography, Dance, Music, Photography, or Theatre.

_____	3	_____	_____	____

Note: Biology majors will fulfill their distributive requirements in the Sciences with

CHE 103 and PHY 130/170. These courses are listed under Supporting Courses.

III. DIRECTED ELECTIVES – 14-15 credits (as needed to reach 120 credits at graduation)

_____	___	_____	_____	____
_____	___	_____	_____	____
_____	___	_____	_____	____
_____	___	_____	_____	____
_____	___	_____	_____	____

IV. SUPPORTING COURSES (28-29 credits)

Calculus ***	MAT __	3/4	_____	_____	____
General Chemistry I	CHE 103	3	_____	_____	____
Exp. General Chemistry I	CRL 103	1	_____	_____	____
General Chemistry II	CHE 104	3	_____	_____	____
Exp. General Chemistry II	CRL 104	1	_____	_____	____
Organic Chemistry I	CHE 231	4	_____	_____	____
Exp. Organic Chemistry I	CRL 231	2	_____	_____	____
Organic Chemistry II	CHE 232	3	_____	_____	____
General Physics I ****	PHY 130	4	_____	_____	____
or Physics I	PHY 170	4			
General Physics II	PHY 140	4	_____	_____	____
or Physics II	PHY 180	4			

V. Biology Ecology Core (39 credits) Must have 2.0 to graduate.

A. Required courses (24 credits)

General Biology **	BIO 110	3	_____	_____	____
Botany **	BIO 215	3	_____	_____	____
Zoology **	BIO 217	3	_____	_____	____
Cell Physiology **	BIO 220	3	_____	_____	____
Genetics **	BIO 230	3	_____	_____	____
Ecology **	BIO 270	3	_____	_____	____
Biostatistical Applications	BIO 310	3	_____	_____	____
Seminar or Internship or Independent Study**△	BIO 490/409/491	3	_____	_____	____

B. Biology Electives (15 credits)

_____	___	_____	_____	____
_____	___	_____	_____	____
_____	___	_____	_____	____
_____	___	_____	_____	____
_____	___	_____	_____	____

Biology Electives to be selected from:

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

VI. OTHER ECOLOGY RELATED ELECTIVES (6-7 credits)

To be chosen under advisement from Biology Department approved list below.

_____ ___ _____ _____ _____

_____ ___ _____ _____ _____

Ecology and Conservation Concentration majors must also take 2 courses (6-7 semester hours) under advisement in disciplines germane to ecology. Student originated requests to use a course not on the list to fulfill this requirement must be signed by their Advisor, then by the Department Chair. Select two from the following list:

Department of Biology		**Department of Geology & Astronomy**	
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. Writing Emphasis *See college catalog for details.*

BIO 220 ___ _____ _____ _____

_____ ___ _____ _____ _____

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

Total degree program: 120 credits.

Requirements

* Courses in Communications, second WRT course, and Calculus must be selected with the approval of the advisor. Approved Communication courses are SPK 199 (for transfer students only), 208, or 230. Approved WRT courses are 200, 204, 205, 206, 208, or 220.

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

*** 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 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.

△ Students using BIO 409 to fill this requirement must be aware that using three credits in a required Biology course (section VI A) will not also count as three credits towards a Biology elective (section VI B). Check with your academic advisor if you are unsure of credit usage.

All students entering WCU Fall of 1980 or later must take at least three approved Writing Emphasis courses, totaling at least 9 credits; students who enter with 40-70 transfer credits need only 2, and a minimum of 6 credits; students who enter with more than 70cr. only need one course (at least 3 credits). **At least 1 Writing Emphasis course must be taken at the 300 or 400 level for all students.**

A maximum of 8 combined credits from BIO 409 & 491 may be applied to total Biology credits.

Suggested Sequence for B.S. Biology Majors

Ecology and Conservation Concentration

Fall 2018 – Spring 2019

	Semester #1 (16 credits)		**Semester #2 (16 credits)**
____	WRT 120 (3)	____	WRT 2 __ __ (3)
____	BIO 110 (3)	____	BIO 215 or 217 (3)
____	CHE 103/CRL 103 (3)/(1)	____	CHE 104/CRL 104 (3)/(1)
____	MAT 121 (3) or MAT 143, 145, 161	____	MAT 121 (3) or MAT 143, 145, 161
____	Gen Ed Distributive (3)	____	Gen Ed Distributive (3)
	Semester #3 (15 credits)		**Semester #4 (15 credits)**
____	BIO 215 or 217 (3)	____	BIO 220 or 230 (3)
____	CHE 231/CRL 231 (4)/(2)	____	BIO 270 (3)
____	Math (if still needed) (3)	____	CHE 232 (3)
____	Gen Ed Distributive (3)	____	SPK 208 or 230 (3)
		____	Gen Ed Distributive (3)
	Semester #5 (16 credits)		**Semester #6 (16 credits)**
____	BIO 220 or 230 (3)	____	BIO 310 (3)
____	PHY 130/170 (4)	____	BIO ECOLOGY Elective (3)
____	Diversity (J) Course (3)	____	PHY 140/180 (4)
____	BIO ECOLOGY Elective (3)	____	Interdisciplinary (I) Course (3)
____	Directed Elective (3)	____	Directed Elective (3)
	Semester #7 (15 credits)		**Semester #8 (15 credits)**
____	BIO ECOLOGY Elective (3)	____	BIO ECOLOGY Elective (3)
____	BIO ECOLOGY Elective (3)	____	BIO ECOLOGY Elective (3)
____	Ecology Relevant Elective (3)	____	Ecology Relevant Elective (3)
____	Directed Elective (3)	____	Directed Elective (3)
____	Gen Ed Distributive (3)	____	BIO 490/409/491 (3)

All required 200 level Biology courses should be completed by the end of Semester #5.
Students should take MAT 121 (Statistics) in the first year.