

B. S. IN BIOLOGY: CELL AND MOLECULAR CONCENTRATION

Fall 2018 – Spring 2019

REQUIREMENT	COURSE	CREDITS	TERM	YEAR	GRADE
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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	_____
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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 – 13-14 credits (as many as needed to reach 120 credits at graduation)

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

IV. SUPPORTING COURSES (31-32 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	_____	_____	_____
Biochemistry I	CHE 476	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 Courses (40 credits) Must have 2.0 to graduate.

A. Required courses (28 credits)

General Biology **	BIO 110	3	_____	_____	_____
General Microbiology**	BIO 214	4	_____	_____	_____
Botany ** or Zoology	BIO 215/217	3	_____	_____	_____
Cell Physiology **	BIO 220	3	_____	_____	_____
Genetics **	BIO 230	3	_____	_____	_____
Molec. Biol. Techniques	BIO 333	2	_____	_____	_____
Cellular and Molecular **	BIO 421	4	_____	_____	_____
Molecular Genetics	BIO 431	3	_____	_____	_____
Seminar or Internship or	BIO 490/409/491				
Independent Study or CHE 491** [△]		3	_____	_____	_____

Students who take CHE 491 instead of Bio 490/491/ 409 must take 14 credits of upper level CHE or BIO courses.

B. Biology or Chemistry electives (14 credits)

Select 14 semester hours from courses in BIO or CHE at or above the 300 level (except BIO 307 and 469). Courses should be chosen in consultation with the student's advisor.

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

VI. Writing Emphasis *See college catalog for details.*

<u>BIO 220</u>	_____	_____	_____	_____
_____	_____	_____	_____	_____
*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

Cell & Molecular Concentration

Fall 2018 – Spring 2019

_____	Semester #1 (16 credits) WRT 120 (3) _____ BIO 110 (3) _____ CHE 103/CRL 103 (3)/(1) _____ MAT 121 (3) or MAT 143, 145, 161 _____ Gen Ed Distributive (3)	_____	Semester #2 (16 credits) WRT 2 ____ (3) _____ BIO 215 or 217 (3) _____ CHE 104/CRL 104 (3)/(1) _____ MAT 121 (3) or MAT 143, 145, 161 _____ Gen Ed Distributive (3)
_____	Semester #3 (16 credits) CHE 231/CRL 231 (4)/(2) _____ BIO 214 (4) _____ Gen Ed Distributive (3) _____ SPK 208 or 230 (3)	_____	Semester #4 (12 credits) BIO 230 (3) _____ BIO 220 (3) _____ CHE 232 (3) _____ Gen Ed Distributive (3)
_____	Semester #5 (15 credits) BIO 333 (2) _____ PHY 130/170 (4) _____ Diversity (J) Course (3) _____ Directed Elective (3) _____ Directed Elective (3)	_____	Semester #6 (16 credits) CHE 476 (3) _____ PHY 140/180 (4) _____ Interdisciplinary (I) Course (3) _____ Directed Elective (3) _____ BIO/CHE Elective (3)
_____	Semester #7 (15 credits) BIO 431 (3) _____ BIO/CHE Elective (3) _____ BIO/CHE Elective (3) _____ Directed Elective (3) _____ Gen Ed Distributive (3)	_____	Semester #8 (16 credits) BIO 421 (4) _____ BIO/CHE Elective (3) _____ BIO/CHE Elective (3) _____ Directed Elective (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.

CRL 232 is strongly recommended for any student considering Professional or Graduate training following completion of their degree.