BIOLOGY MAJOR with Biotechnology Concentration- **BS (49-57 credits) & 3 BIOT Course from CNM TRACK SHEET**

Effective for the **FALL 2023** catalog

All courses in Biology and supportive courses must be completed with a minimum grade of C or higher. Note: In order to fulfill the 50% major residency requirement, at least 25 credit hours of biology major coursework must be completed at UNM. (Course numbers in parentheses denote former course numberings)

The following courses **cannot be applied towards biology elective hours**: BIOL 1110/1110L, 1140/1140L, and BIOL 1310.

1: Complete the introductory sequence:

Introductory Courses	Course Name	Credit Hours	Corequisites
BIOL 2101	Molecules to Cells	3	None
BIOL 2102	Organisms to Ecosystems	3	None
BIOL 2103L	Discovering Biology Lab	1	BIOL 2101 OR BIOL 2102

2: Complete 1 of 3 sophomore seminars:

Course	Course Name	Credit Hours	Prerequisites
BIOL 330	Interdisciplinary Seminar	1	Prerequisites: BIOL 2101/2102/2103L
BIOL 331	Cell & Molecular Seminar	1	Prerequisites: BIOL 2101/2102/2103L
BIOL 332	Evolution, Ecology & Organismal Seminar	1	Prerequisites: BIOL 2101/2102/2103L

3: Complete the evolution requirement:

Course	Course Name	Credit Hours	Prerequisites
BIOL 300C	Evolution	4	Prerequisites: BIOL 2101/2102/2103L

4: Complete 3 of 5 intermediate courses:

Course	Course Name	Credit Hours	Pre/Co-Requisites
BIOL 301C	Molecular & Cell Biology	4	Prerequisites: BIOL 2101/2102/2103L
BIOL 302C	Genes to Genomes	4	Prerequisites: BIOL 2101/2102/2103L
BIOL 304C	Plant & Animal Form & Function	4	Prerequisites: BIOL 2101/2102/2103L Corequisite: 300C
BIOL 310C	Principles of Ecology	4	Prerequisites: BIOL 2101/2102/2103L Corequisite: 300C
BIOL 351/352L	General Microbiology	4	Prerequisites: BIOL 2101/2102/2103L

5. Complete 6 (BS) or 3 (BA) upper-division courses (400-level) with at least 1 course in all three categories. Prerequisites vary, check catalog. BIOL 400 and BIOL 499 cannot count towards this requirement. The three categories are <u>1.) Cell, Molecular, Physiology (CMP) 2.) Evolution, Ecology, Organismal (EEO) 3.) Integrative (INT)</u>

400-level Course	Course Name	Course category
1)		CMP category
2)		EEO category
3)		INT category
4)		Any category
5)		Any category
6)		Any category

6. Complete 1 senior seminar:

Course	Course Name	Credit Hours	Prerequisites
BIOL 430	Departmental Seminar	1	Prerequisites: Intermediate Coursework
BIOL 431	Brown Bag Seminar	1	Prerequisites: Intermediate Coursework

7. Complete 2 Additional Elective (3-4 credits each). Please see below for list of pre-approved electives:

Course	Course Name
1)	
2)	

8. Complete 2 Additional Elective (3-4 credits each). Please see below for list of pre-approved electives:

Introductory Courses	Course Name	Credit Hours	Pre/Co-Requisites
BIOL 2710 (BIOT 1020)	Biotechnology 1 (Fall)	4	**Prerequisite**: BIOL 2110C (201L) and CHEM 1215/1215L (121 & 123L) *Co-requisite:* BIOL 2410C and CHEM 1225/1225L (122 & 124L)
BIOL 2715 (BIOT 2110)	Biotechnology 2 (Spring)	4	**Prerequisites**: BIOL 2710 (BIOT 1020)
BIOL 2720 (BIOT 2210)	Biotechnology 3 (Summer)	3	**Prerequisites:** BIOL 2715 (BIOT 2210)

Supportive Courses

MATH

MATH 1430	Applications of Calculus 1 *Pre-Requisite: MATH 1220*	**OR**	MATH 1512	Calculus 1 *Pre-Requisite: MATH 1230 & 1240 or MATH 1250*
MATH 1350	Introduction to Statistics *Pre-Requisite: Math 1220*		MATH 1350	Introduction to Statistics *Pre-Requisite: MATH 1220*

PHYSICS

PHYS 1230	Algebra-Based Physics *Pre-Requisite: MATH 1430 or MATH 1512*	**OR**	PHYS 1310	Calculus-Based Physics 1 *Pre-Requisite: MATH 1512*	**OR**	PHYS 1115	Survey of Physics
PHYS 1240	Algebra-Based Physics *Pre-Requisite: PHYS 1230*		PHYS 1320	Calculus-Based Physics 2 *Pre-Requisite: PHYS 1310*		GEOL 1110	Physical Geology

CHEMISTRY

CHEM 1215 & CHEM 1215L	General Chemistry 1 Lecture & Lab
CHEM 1225 & CHEM 1225L	General Chemistry 2 Lecture & Lab Pre-Requisite: CHEM 1215 & CHEM 1215L

Section 5 Requirement: Complete 6 (BS) or 3 (BA) upper-division courses (400-level) with at least 1 course in all three categories.

***Courses offered may vary per semester. Please ensure you consider multiple options.**

CELL, MOLECULAR, PHYSIOLOGY (CMP)

401 Topics in Cell and Molecular Biology (3)
404 Topics in Physiology (3)
412 Developmental Biology (3)
413 Human Microanatomy (3)
425 Molecular Genetics (3)
429 Molecular Cell Biology (3)
435 Comparative Animal Physiology (3)
440 Medical Physiology (3)
445 Biology of Toxins (3)
446L Lab Methods in Molecular Biology (4)
447 Pharmacology (3)
450 Virology (3)
452 Microbiomes (3)
456 Immunology (3)
482L Parasitology (4)
497 Principles of Gene Expression (3)

EVOLUTION, ECOLOGY, ORGANISMAL (EEO)

406 Topics in Organismal Biology
408L Bosque Internship (3) (Can Be Taken Twice)
409 Topics in Ecology and Evolution (3)
438L General Vertebrate Zoology (4)
442 Biodiversity Informatics (3)
455 Ethology (4)
457 Animal Sexual Strategies (3)
461L Introduction to Tropical Biology (3)
462 Emerging Model Organisms (3)
463L Flora for New Mexico (4)
464L General Botany (4)
465 Plants and People (3)
475 Community Ecology (3)
477 Ecology of the Past (3)
478 Forest Ecology (3)
479 Conservation Biology (3)
482L Parasitology (4)
484 Biology of Fungi (4)
485L Entomology (4)
486L Ornithology (4)
487L Ichthyology (4)
488L Herpetology (4)
489L Mammalogy (4)
491 Population Genetics (3)
493 Computational Genetics (3)
494 Biogeography (3)

INTEGRATIVE (INT)

415 Data Science for Biology (3)
419 Topics in Interdisciplinary Science (3)
421 Astrobiology (3)
422 Symbiosis (3)
436 Fantastic Fungi (4)
444 Interdisciplinary Museum Studies (3)
461L Introduction to Tropical Biology (4)
471 Plant Physiological Ecology (3)
480 Global Change Biology (3)
492 Introduction to Mathematical Biology (3)
495 Limnology (3)

Section 7 Requirement: Complete 2 Additional Elective (3-4 credits each)

Course	Title	Pre/Co-Requisites
BIOL 2305* see advisor	Microbiology for Health Sciences	BIOL 1140/1140L OR 2110C AND CHEM 1120C OR CHEM 1215/1215L
BIOL 2210	Human Anatomy and Physiology 1	BIOL 1140/1140L OR 2110C AND CHEM 1120C OR CHEM 1215
BIOL 2225	Human Anatomy and Physiology 2	BIOL 2210
BIOL 2710 (CNM only)	Biotechnology 1	BIOL 2110C AND CHEM 1215/1215L AND CHEM 1225/1225L
BIOL 2715 (CNM only)	Biotechnology 2	BIOL 2710
BIOL 2720 (CNM only)	Biotechnology 3	BIOL 2715
CHEM 301/303L	Organic Chemistry	CHEM 1225/1225L
CHEM 302/304L	Organic Chemistry 2	CHEM 301/303L
CHEM 421	Biological Chemistry	CHEM 302 AND 312 OR 315
CHEM 315	Introductory Physical Chemistry	CHEM 1225 /1225L AND MATH 1440 OR 1522 AND PHYS 1240 OR 1320
ANTH 2135	Human Biology	None
ANTH 2190C	Forensic Anthropology	None
ANTH 338	Environmental Conflict	None
ANTH 350	Human Genetics and Genomics	ANTH 1135 OR BIOL 1110 OR 1140 OR 2110C OR 2410C
ANTH 357	Human Evolution	ANTH 1135 OR 2175
ANTH 360	Human Behavioral Ecology	ANTH 1170 OR 1135 OR BIOL 1110
ANTH 362	Great Apes: Mind and Behavior	Junior/Senior Standing
ANTH 363	Primate Social Behavior	Junior/Senior Standing
ANTH 390L	Human Evolutionary Physiology and Anatomy	None
BIOC 423	Introductory Biochemistry	CHEM 302
BIOM 507* see advisor	Advanced Molecular Biology	CHEM 301 AND BIOL 2110C OR BIOC 423
BIOM 508* see advisor	Advanced Cell Biology	BIOM 507
BIOM 509* see advisor	Principles of Neurobiology	None
BIOM 514* see advisor	Immunobiology	None
BIOM 515* see advisor	Cancer Biology	None
CS 105L	Introduction to Computer Programming	None
CS 108L	Computer Science for All: An Introduction to Computational Science and Modeling	None
CS 152L	Computer Programming Fundamentals	CS 105L OR 108L OR ECE 131L
CS 251L	Intermediate Programming	CS 152L (grade B- or better)
ECON 2125	Society and Environment	None
ECON 335	Health Economics	ECON 2110 AND 2120
ECON 342	Environmental Economics	ECON 2110 AND 2120
ECON 343	Natural Resource Economics	ECON 2110 AND 2120 AND 307 OR MATH 1430 OR MATH 1512 AND ECON 300
ENVVS 1130/1130L	The Blue Planet	None

ENVS 320L	Environmental Systems	ENVS 1130/1130L OR GEOL 1110/1110L AND MATH 1220 OR 1230 OR 1240 OR 1250 OR 1512
ENVS 322L	Life and the Earth System	ENVS 1130/1130L OR GEOL 1110/1110L AND BIOL 1140/1140L AND MATH 1240 OR 1250 AND ENVS 320L
ENVS 323L	Water in the Earth System	ENVS 320L OR EPS 304L AND CHEM 1225/1225L And ENG 130L AND MATH 1512 AND PHYS 1310 AND ENVS 315 OR MATH 1522
ENVS 430L	Advanced Environmental Science	MATH 1522 AND PHYS 1310 AND ENVS 324 AND 323L
EPS 352	Global Climate Change	MATH 1220
EPS 365	Exploring the Solar System	None
EPS 405L	Stable Isotope Geochemistry	CHEM 1215/1215L AND MATH 1522
EPS 410	Fundamentals of Geochemistry	CHEM 1215/1215L AND CHEM 1225/1225L AND MATH 1240
EPS 415	Geochemistry of Natural Waters	EPS 304L OR CHEM 1225/1225L
EPS 439	Paleoclimatology	ENVS 1130 OR GEOL 1110
PH 101	Introduction to Population Health	None
PH 102	Global Health Challenges and Responses	None
PH 201	Population Health Biology	BIOL 1110 OR 1140 OR 2110C OR 2210 OR 2305
PH 311	Essentials of Epidemiology: The Language of Population Health	MATH 1350
PHRM 305	Fundamentals of Pathophysiology and Immunology	BIOL 2225
PHRM 476	Molecular and Cellular Pharmacology	None
PSYC 342	Evolution and Human Behavior	PSYC 1110 AND 2250
PSYC 344	Human Neuropsychology	PSYC 1110 AND 2250
PSYC 345	Neuroscience of Aging and Dementia	PSYC 1110 AND 2250
GEOG 381L	Introduction to Geographic Information Systems	None
GEOG 423	Environmental Systems Modeling	GEOG 380L AND MATH 1430 OR 1512
GEOG 441	Environmental Management	None
GEOG 442	Water Governance	None
GEOG 443	Public Lands	None
GEOG 457	Environmental Security: Energy	None
GEOG 483L	Remote Sensing Fundamentals	GEOG 381L
GEOG 485L	Interactive Web Mapping	GEOG 381L
SHS 310	Human Anatomy and Physiology of Human Communication	SHS 310