



UNIVERSITY OF COLORADO
AT COLORADO SPRINGS
COLLEGE OF LETTERS, ARTS
AND SCIENCES

Department of Biology

Molecular/Cellular Option

Department Chair: Dr. Jackie Berning, Associate Professor
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Objectives:

- ◆ Biologists seek to answer questions concerning all aspects of all living things. Biologists create new knowledge in diverse areas such as population dynamics, gene structure and function, health and disease, and increased yields of food products.
- ◆ The Molecular/Cellular degree option is intended for students who wish to study the molecular mechanisms underlying cellular structure and function and the processes of organismal development. The option provides a solid foundation for graduate and professional studies emphasizing cellular and molecular processes.
- ◆ Get more involved on campus! Join Beta Beta Beta, the Pre-Med Society or Students for Environmental Awareness and Sustainability (SEAS) to meet other students also interested in this field. Contact the ROAR office at roar@uccs.edu or 262-3470 for more information.

	<u>Credits</u>
B.A. Biology – Molecular/Cellular Option – 30 credits, 16 upper division	
(NOTE: BIOL 100, 105, 106, 114, 151 and 153 cannot be counted toward this major)	
(Grade of 'C-' or higher must be attained in <i>all</i> required courses.)	
BIOL 120 (<i>formerly 115/116</i>) General Biology I + Lab	4
BIOL 121 (<i>formerly 110/111</i>) General Biology II + Lab	4
BIOL 300 Biology Statistics	3
BIOL 302 Cell Biology	3
BIOL 383 Genetics	3
BIOL 401 Seminar in Biology	1
BIOL 425 Evolution	3
BIOL 481 General Biochemistry I	3
BIOL 482 General Biochemistry II	4
Complete two lab courses from the following:	5-6
BIOL 384 Genetics Laboratory	
BIOL 409 Methods in Immunology	
BIOL 486 Biochemistry & Molecular Biology Laboratory	
One Metabolism/Physiology Course from:	3-4
BIOL 321 Human Physiology	BIOL 440 Plant Physiology
BIOL 322 Animal Physiology	BIOL 477 Human Metabolism
BIOL 330 Exercise Physiology	
One Microbiology Course from:	3-4
BIOL 310/311 (both) Microbiology: Bacteriology/Mycology + Lab	
BIOL 314 Microbiology: Virology	
Two Molecular/Cellular Courses from:	6-7
BIOL 361 Vertebrate Embryology/Dev. Anatomy	BIOL 431 Advanced Immunology
BIOL 405 Technology Transfer and Biotechnology	BIOL 467 Applied Molecular Genetics
BIOL 409 Methods in Immunology	BIOL 484 Molecular Biology
<u>Auxiliary Requirements</u>	
CHEM 103/106 General Chemistry + Lab I/II	10
CHEM 331,332,333,334 Organic Chemistry + Labs I&II	10
CHEM 450 Biophysical Chemistry	4
PES 111, 112, 116, 216 General Physics + Labs I & II	10
MATH 135 Calculus I	4
MATH 136 Calculus II	4
<u>General Education Requirements**</u>	
**Students are required as part of their general education requirements to complete courses in Oral Communication, Cultural Diversity, and Global Awareness. These courses are identified in the LAS section of the schedule of courses and in the bulletin.	
Composition Requirement	6
Humanities Area Requirement	
General	9
Core	3
Social Science Area Requirement	12
General electives	+ 3
Total Credits- 45 upper division (300-400) level	120

MODEL DEGREE PROGRAM

BIOLOGY-MOLECULAR/CELLULAR OPTION

The following four-year plan lists all the specific course requirements for the Bachelor of Science in Biology degree. The order in which these courses are taken may vary with course availability. **Students are responsible for completing all course prerequisites.** Please note that this is a *suggested* degree program; your program may vary.

Suggested First Year

FALL

- _____ ENGL 131 Rhetoric & Writing I
*(Prer. of ENGL 099 or ACT 19+ or SAT 450+)**
- _____ BIOL 120 Gen. Biology I + Lab-4 cr (**FALL ONLY**)
(Prer. high school chemistry or coreq. CHEM 103)
- _____ Social Science Elective
- _____ CHEM 103 General Chemistry I-5 cr
(Prer. 1 yr high school chemistry and 2 years high school math)

TOTAL=15 credits

SPRING

- _____ ENGL 141 Rhetoric & Writing II
*(Prer. of ENGL 131 or ACT 29+ or SAT 650+)**
- _____ BIOL 121 Gen. Biology II + Lab-4 cr (**SPRING ONLY**) *(Prer. BIOL 120)*
- _____ MATH 135 Calculus I-4 cr *(Prer. MATH 105 or score of 10+ on Calc. Readiness Exam)*
- _____ CHEM 106 General Chemistry II-5 cr
(Prer. CHEM 103 with grade of 'C' or higher)

TOTAL=16 credits

Suggested Second Year

FALL

- _____ BIOL 302 Cell Biology (**FALL ONLY**) *(Prer. BIOL 120, 121 and CHEM 103, 106)*
- _____ MATH 136 Calculus II -4 cr
- _____ CHEM 331/333 Organic Chemistry + Lab-5 cr (**FALL ONLY**)
(Prer. CHEM 106 with grade of 'C' or higher)
- _____ General Humanities Elective

TOTAL=15 credits

SPRING

- _____ CHEM 332/334 Organic Chemistry II + Lab – 5cr.
(Prer. CHEM 331 and 333 or 337 with grades 'C' or higher)
- _____ BIOL Lab Course *(From list, prer. may apply)*
- _____ Oral Communication requirement

Social Science Elective (G)

TOTAL=14 credits

Suggested Third Year

FALL

- _____ BIOL 425 Evolution (**FALL ONLY**)
- _____ BIOL 300 Biology Statistics (**FALL ONLY**)
- _____ PES 111/116 General Physics I + Lab – 5 cr.
(coreq. Math 135)
- _____ General Humanities Elective
- _____ Social Science Elective (C)

TOTAL=17 credits

SPRING

- _____ BIOL 383 Genetics (**SPRING ONLY**) *(Prer. BIOL 302)*
- _____ Metabolism Course *(From list, prer. may apply)*
- _____ PES 112/216 General Physics II + Lab – 5 cr.
(coreq. Math 136)
- _____ BIOL Lab Course *(From list, prer. may apply)*

TOTAL=14 credits

Suggested Fourth Year

FALL

- _____ BIOL 481 General Biochemistry *(Prer. BIOL 302 and CHEM 332)*
- _____ Microbiology Course
(From list, prer. may apply)
- _____ CHEM 450 Biophysical Chemistry - 4 cr
(prer. BIOL 121, CHEM 332,334, MATH 135, PES 102, 215)
- _____ General Humanities Elective
- _____ Molecular/Cellular Course *(from list, prer. may apply)*

TOTAL=16 credits

SPRING

- _____ BIOL 401 Seminar in Biology-1 cr
(Prer. Senior status)
- _____ BIOL 482 General Biochemistry II – 4 cr
(SPRING ONLY) (Prer. Organic Chemistry)
- _____ Molecular/Cellular Course *(from list, prer. may apply)*
- _____ Social Science Elective
- _____ HUM 300+ Core Humanities *(Prer. of junior status)*

TOTAL=14 credits

All courses are 3 credits unless otherwise stated.

*ACT/SAT placement scores are based on the English section of the exam only.

Courses fulfilling General Humanities and Social Sciences, as well as the Global Awareness (G), Cultural Diversity (D) and Oral Communication (O) requirements, may be found in the Bulletin or the current schedule.

Electives may be used toward a minor, a 2nd major, prerequisites, additional courses in Biology (up to 54 credits maximum) or just for fun!