



Rensselaer

Biology Curriculum

This curriculum is designed to prepare students for admission to graduate or professional school or to enter the workplace. The philosophy behind it is to leave as many options as possible to the student. This flexibility is essential for those students who have specific interests and goals other than those spelled out in more traditional curricula.

First Year					
Fall			Spring		
Number	Course	Credits	Number	Course	Credits
BIOL 1010	Introduction to Biology ¹	3	BIOL 2120	Intro. Cell & Molecular Biol. ¹	4
BIOL 1015	Introduction to Biology Lab	1	CHEM 1200	Chemistry II	4
CHEM 1110	Chemistry. I with Adv.Lab	4	MATH 1020	Calculus II	4
MATH 1010	Calculus I	4		HASS Elective ²	4
	HASS Elective ²	4			
Second Year					
Fall			Spring		
Number	Course	Credits	Number	Course	Credits
BIOL 2500	Genetics and Evolution	4	BIOL 4620	Molecular Biology	4
CHEM 2230	Organic Chemistry Lab I	1	CHEM 2240	Organic Chemistry Lab II	1
CHEM 2250	Organic Chemistry I	3	CHEM 2260	Organic Chemistry II	3
PHYS 1100	Physics I	4	PHYS 1200	Physics II	4
	HASS Elective ²	4		HASS Elective ²	4
Third Year					
Summer			Fall/Spring*		
Number	Course	Credits	Number	Course	Credits
BCBP 4760	Molecular Biochemistry I ⁵	4	BIOL	Biology Elective ⁶	4
BIOL	Biology Elective ⁶	4		Elective	4
	Elective	4		Elective	4
	HASS Elective ²	4		HASS Elective ²	4
Fourth Year					
Fall			Spring		
Number	Course	Credits	Number	Course	Credits
BIOL	Advanced Lab Option ³	4		Culminating Experience ⁴	4
BIOL	Biology Elective ⁶	4	BIOL	Biology Elective ⁶	4
BIOL 4200	Biostatistics	4		Elective	4
	Elective	4		Elective	4

This curriculum requires a minimum of 128 credit hours.

*Either Fall or Spring semester will be away

¹ Students who apply Advanced Placement credits in place of BIOL 1010 may take BIOL 2120 in its place.

² Humanities, Arts & Social Science (HASS) courses should add up to 24 credits.

³ Communication Intensive Requirement (4 credits) cannot be satisfied with transfer credits. *see other side*

⁴ Culminating Experience Requirement (4 credits). *see other side*

⁵ Cannot be satisfied with transfer credits.

⁶ Biology Elective Requirement (16 credits). One of the biology electives can be chosen from any of the following classes: CHEM 2440, 4300, or 4330, any BCBP course except BCBP 4760, or any BIOL course.

Note 1: Only *four* credits from the following courses are allowed as biology electives: BIOL 4970 Non-thesis Research and BIOL 4990 Senior Research Thesis.

Note 2: Transfer credit can be accepted for 2 Biology elective courses at the 4000 level, but 2 Biology elective courses must be taken at Rensselaer. If the two courses accepted for transfer credit are 3-CR courses, the courses will be accepted but the total number of credits for the Biology electives must equal 16 credits. The two required Rensselaer biology electives must be 4-CR BIOL/BCBP courses. BIOL 2900, 2930, 4900 or 4970 may not substitute for these two required courses.

ELECTIVES

Careful selection of biology electives and technical electives in the third and fourth years may contribute significantly to preparation for various professional goals. Technical electives include any pertinent course in biology, other sciences, or mathematics.

Students who anticipate working on a senior thesis are strongly urged to take BIOL 4200 Biostatistics as soon as possible and one of the following advanced laboratory courses (BIOL 4320, 4710, BIOL 4720, BIOL 4740) in their junior year, since these courses offer excellent preparation for independent laboratory work and meet the communication intensive requirement.

CONCENTRATIONS

Technical and free electives may be chosen to provide a concentration in biochemistry, bioinformatics, biomedical engineering, biophysics, biotechnology (genetic engineering), chemical engineering, computer science, environmental science, management, mathematics, microbiology, psychology, or technical communication. Program advisors should be consulted.

Culminating Experience Courses:

BIOL 4100	From Neuron to Behavior
BIOL 4250	Developmental Biology
BIOL 4260	Advanced Cell Biology
BIOL 4270	Human Physiology
BIOL 4310	Microbiology
BIOL 4350	Virology
BIOL 4540	Sequence Analysis
BIOL 4550	Molecular Modeling
BIOL 4630	Molecular Biology II
BIOL 4660	The Biology of Systems
BIOL 4860	Evolution
BIOL 4870	Lake George BLUE
BIOL 4990	Senior Research Thesis
BCBP 4310	Genetic Engineering
BCBP 4800	Methods in Biophysics
BCBP 4870	Protein Structure Determination

Communication Intensive Courses:

BIOL 4320	Microbiology Laboratory
BIOL 4710	Biochemistry Laboratory
BIOL 4720	Molecular Biology Laboratory
BIOL 4740	Cell & Developmental Biology
BIOL 4961	Human Population
BIOL 4990	Senior Research Thesis

Summer Courses:

BIOL 1010/1015	Introduction to Biology (for non-majors)
BIOL 2500	Genetics and Evolution
BIOL 4200	Biostatistics
BIOL 4270	Human Physiology
BIOL 4320	Microbiology Lab
BIOL 4620	Molecular Biology Lab
BIOL/BCBP/CHEM 4760	Molecular Biochemistry I
BIOL 4900	Team Research
BIOL/BCBP 4940	Readings in Biology
BIOL/BCBP 4970	Non-thesis Research