



Rensselaer

Biochemistry and Biophysics Curriculum

First Year					
Fall			Spring		
Number	Course	Credits	Number	Course	Credits
MATH 1010	Calculus I	4	MATH 1020	Calculus II	4
CHEM 1110	Chemistry, I with Adv.Lab ¹	4	CHEM 1200	Chemistry II	4
BIOL 1010/1015	Introduction to Biology	4	BIOL 2120	Intro. Cell & Molecular Biol.	4
	HASS Elective ²	4		HASS Elective ²	4
Second Year					
Fall			Spring		
Number	Course	Credits	Number	Course	Credits
CHEM 2250	Organic Chemistry I	3	CHEM 2260	Organic Chemistry II	3
CHEM 2230	Organic Chemistry Lab I	1	CHEM 2240	Organic Chemistry Lab II	1
PHYS 1100	Physics I	4	PHYS 1200	Physics II	4
	Quantitative Option	4		Elective ⁵	4
BIOL 2500	Genetics and Evolution	4		HASS Elective ²	4
Third Year					
Summer			Fall/Spring*		
Number	Course	Credits	Number	Course	Credits
BCBP 4760	Molecular Biochemistry I ⁶	4	BCBP 4770	Molecular Biochemistry II	4
CHEM 2440	Phys. Chem. Life Sci. ³	4	BIOL 4620	Molecular Biology	4
	Laboratory Option	4		Restricted Elective ⁵	4
	HASS Elective	4		HASS Elective	4
Fourth Year					
Fall			Spring		
Number	Course	Credits	Number	Course	Credits
	Molec. Biophysics Module	4		Molec. Biophysics Module ⁶	4
BCBP 4990	Culminating Experience ⁴	4		HASS Elective ²	4
BIOL 4200	Biostatistics	4		Elective ⁵	4
	Elective	4		Elective ⁵	4

Total credits must add up to 128.

*Either Fall or Spring semester will be away

¹ Students may substitute CHEM 1100 for CHEM 1110.

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

³ Students may substitute Macroscopic and Microscopic Physical Chemistry (CHEM 4410 & CHEM 4420).

⁴ Required course. Senior Research Thesis (BCBP 4990) is recommended; however, students may substitute any of the approved BIOL, BCBP, or CHEM culminating experience courses

⁵ Restricted Electives: at least 8 credits in science or engineering Molecular Biophysics Modules, Laboratory Option, and the Quantitative Option may be taken in different semesters than those shown if electives are shifted.

⁶ Molecular biophysics modules and laboratory options cannot be satisfied with transfer credits.

Continued

Molecular Biophysics Modules - Choose 2.

- BCBP 4310 Genetic Engineering
- BCBP 4780 Protein Folding
- BCBP 4870 Protein Structure Determination
- BCBP 4550 Molecular Modeling
- BCBP 4660 The Biology of Systems
- BCBP 4800 Methods in Biophysics

Laboratory Option - Choose 1.

- BCBP 4710 Biochemistry Laboratory
- BIOL 4720 Molecular Biology Laboratory

Quantitative Option - Choose 1

- CSCI 1010 Introduction to Computer Programming
- CSCI 1100 Computer Science I
- MATH 2010 Multivariable Calculus & Matrix Algebra
- MATH 2400 Introduction to Differential Equations
- MATH 4720 Mathematics in Medicine and Biology

Approved 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 4860 Evolution
- BIOL 4870 Lake George BLUE
- BCBP 4310 Genetic Engineering
- BCBP 4660 The Biology of Systems
- BCBP 4800 Methods in Biophysics
- BCBP 4870 Protein Structure Determination
- CHEM 4300 Medicinal Chemistry
- CHEM 4310 Bioorganic Mechanisms

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