



Rensselaer

BIOINFORMATICS AND MOLECULAR BIOLOGY B.S.

This degree program is designed to prepare students for admission to graduate or professional school. 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. This curriculum requires a minimum of 128 credit hours

FIRST YEAR

Fall			Spring		
Number	Course	CR	Number	Course	CR
BIOL 1010	Introduction to Biology	3	BIOL 2120	Intro. to Cell & Molecular Biology	4
BIOL 1015	Intro to Biology Lab	1	CHEM 1200	Chemistry II	4
CHEM 1110	Chemistry I with Advanced Lab ¹	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	CR	Number	Course	CR
CSCI 1100	Computer Science I	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	CSCI 1200	Data Structures	4

THIRD YEAR (WITH 3RD YEAR FALL SEMESTER AWAY)

The Arch Summer Semester ⁶			Spring		
Number	Course	CR	Number	Course	CR
BIOL 4720	Molecular Biology Lab ⁴	6	BIOL 4550	Molecular Modeling ⁴	4
BIOL 4760	Molec Biochemistry I ⁴	4		Elective	4
	Elective	2		Concentration Elective ³	4
	HASS Elective ²	4		HASS Elective ²	4

FOURTH YEAR (WITH 3RD YEAR FALL SEMESTER AWAY)

Fall			Spring		
Number	Course	CR	Number	Course	CR
BIOL 4630	Molecular Biology II	4		Elective	4
BIOL 4540	Sequence Analysis ⁴	4		Elective	4
	HASS Elective ²	4		Culminating Experience ^{4,5}	4
	Elective	4		Concentration Elective ³	4

THIRD YEAR (WITH 3RD YEAR SPRING SEMESTER AWAY)

The Arch Summer Semester ⁶			Fall		
Number	Course	CR	Number	Course	CR
BIOL 4760	Molec Biochemistry I ⁴	4	BIOL 4630	Molecular Biology II	4
	HASS Elective ²	4	BIOL 4720	Molecular Biology Lab ⁴	6
	HASS Elective ²	4		Concentration Elective ³	4
	Elective	4		Elective	2

FOURTH YEAR (WITH 3RD YEAR SPRING SEMESTER AWAY)

Fall			Spring		
Number	Course	CR	Number	Course	CR
BIOL 4540	Sequence Analysis ⁴	4	BIOL 4550	Molecular Modeling ⁴	4
	HASS Elective ²	4		Culminating Experience ^{4,5}	4
	Concentration Elective ³	4		Elective	4
	Elective	4		Elective	4

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FOOTNOTES

1. Students may substitute CHEM 1100 for CHEM 1110.
2. Humanities, Arts, & Social Science (HASS) courses should add up to 24 credits.
3. Concentration Elective. Choose one from each list below. Four-credit courses may be satisfied with pre-approved transfer credits.
4. May not be satisfied with transfer credits.
5. BIOL 4990 Senior Research Thesis, BIOL 4900 Team Research, or BIOL 4940 Readings in Biology with prior approval of a BFMB faculty member, or any 4000 level course from the Concentration Electives list.
6. For students who have applied for and been granted an exception, The Arch Summer courses would be taken during the fall semester. For listing of the exception process go to: <http://info.rpi.edu/arch/students/#ExceptionProcess>

CONCENTRATION ELECTIVES

	Computational		Biological
BIOL 4200	Biostatistics	BCBP 4310	Genetic Engineering
BIOL 4961	Human Population	BCBP 4660	The Biology of Systems
CSCI 2300	Intro. to Algorithms	BCBP 4710	Biochemistry Laboratory
CSCI 4020	Computer Algorithms	BIOL 4770	Molecular Biochemistry II
CSCI 4100	Machine Learning from Data	BCBP 4800	Methods in Biophysics
CSCI 4340	Ontologies	BCBP 4870	Prot. Structure Determination
CSCI 4350	Data Science	CHEM 4440	Phys. Chem for Life Sciences
CSCI 4380	Database Systems	CHEM 4300	Medicinal Chemistry
CSCI 4390	Data Mining	CHEM 4310	Bioorganic Mechanisms
CSCI 4800	Numerical Computing		
MATH 2010	Multivar. Calc. & Matrix Alg.		
MATH 2400	Intro. to Differential Equations		
MATH 4720	Math. In Medicine & Biology		
MATP 4600	Probability Theory & App.		

SUMMER COURSES

BIOL 1010	Intro. to Biology	BIOL 4740	Adv. Cell Biology Laboratory
BIOL 1015	Intro. to Biology Laboratory	BIOL 4760	Molecular Biochemistry I
BIOL 4200	Biostatistics	BIOL 4900	Team Research
BIOL 4270	Human Physiology	BIOL/BCBP 4940	Readings in Biology
BIOL 4320	Microbiology Laboratory	BIOL/BCBP 4970	Non-Thesis Research
BIOL 4720	Molecular Biology Laboratory		