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 Core Elective[2]	4
	HASS Core 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 Core 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 Core Elective[2]	4		HASS Core 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 Core 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 Core Elective[2]	4	BIOL 4720	Molecular Biology Lab[4]	6
	HASS Core 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 Core 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 and Social Sciences (HASS) Core Electives: A total of 24 credits of HASS Core Electives should be taken. Students should take an Inquiry course during their first year. For a listing of HASS Inquiry courses go to: https://info.rpi.edu/hass-inquiry. In addition, students should take a HASS Communications Intensive course during their first three semesters.*
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

BIOL 4200	Biostatistics
BIOL 4961	Human Population
CSCI 2300	Intro. to Algorithms
CSCI 4020	Computer Algorithms
CSCI 4100	Machine Learning from Data
CSCI 4340	Ontologies
CSCI 4350	Data Science
CSCI 4380	Database Systems
CSCI 4390	Data Mining
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.

Biological

BCBP 4310	Genetic Engineering
BCBP 4660	The Biology of Systems
BCBP 4710	Biochemistry Laboratory
BIOL 4770	Molecular Biochemistry II
BCBP 4800	Methods in Biophysics
BCBP 4870	Prot. Structure Determination
CHEM 4440	Phys. Chem for Life Sciences
CHEM 4300	Medicinal Chemistry
CHEM 4310	Bioorganic Mechanisms