

# B.S. in Bioinformatics

## Academic Program Guide for **New First-Year Students** (Effective Fall 2018)

### Department of Molecular & Cellular Biosciences ([mcb@rowan.edu](mailto:mcb@rowan.edu))

*Students who entered Rowan University prior to Fall 2018 should follow the guide for their program and start year in consultation with their advisor.*

## Rowan University Graduation Requirements for all Majors / Degrees

- Students must complete at least 120 semester hours (sh) of coursework that apply to their Rowan University degree.
- Students must have a cumulative GPA of at least 2.0 in Rowan University coursework. (Transfer courses/credit do not count toward the RU GPA.)
- A minimum of 30 sh of coursework must be completed at/through Rowan University.
- Only grades of “D-” or above may apply to graduation/degree requirements. (Some programs may set higher minimums.)
- Students must meet the Rowan Core and Rowan Experience Requirements.
  - An individual course can potentially satisfy one Rowan Core literacy and/or multiple Rowan Experience attributes.
  - Rowan Core & Rowan Experience designations are listed in course details in Section Tally ([www.rowan.edu/registrar](http://www.rowan.edu/registrar)) and may also be searched on that site under “Attributes.” A list of Rowan Core courses is here: <https://confluence.rowan.edu/display/AS/Rowan+Core+Course+List>.
- Students must apply for graduation and should do so for the term in which they will complete all program requirements.

## Program-Specific Graduation Requirements for this Major / Degree

- Students must receive a grade of C or better in all courses satisfying Major requirements.

## Rowan Core Requirements<sup>1</sup>

*Students must satisfy all six Rowan Core Literacies. A minimum total of 3 sh of coursework is required to satisfy each Literacy. With the exception of the 9 sh counted here for Communicative Literacy, credits attached to the courses in this section will apply elsewhere.*

- (COML) Communicative Literacy: *Must be met by the following three courses or their official equivalents:*
  - COMP 01111 College Composition I (3 sh)     COMP 01112 College Composition II (3 sh)     CMS 04205 Public Speaking (3 sh)
- (ARTL) Artistic Literacy                      *Recommendation from major:*
- (GLBL) Global Literacy                         *Recommendation from major:*
- (HUML) Humanistic Literacy                 *Recommendation from major:*
- (QNTL) Quantitative Literacy                 *Recommendation from major:* MATH 01130 (4 sh counted under non-program)
- (SCIL) Scientific Literacy                      *Recommendation from major:* CHEM 06100 (4 sh counted under non-program)

Subtotal of credits counted in this section: 9 sh

## Rowan Experience Requirements

*Students must satisfy all three Rowan Experience attributes. Credits attached to the courses in this section will apply elsewhere.*

- (LIT) Broad-Based Literature Attribute    *Recommendation from major:*
- (WI) Writing Intensive Attribute             *Recommendation from major:* PHIL 09369 or PHIL 09376 (3 sh counts under non-program)
- (RS) Rowan Seminar Attribute<sup>2</sup>             *Recommendation from major:*

## Non-Program Courses (19 sh)

*Courses in this section cannot be in the major department.*

Course #	Course Name	Course Attributes / Notes	Sem/Yr	Grade	Credits
PHIL 09369 or PHIL 09376	Philosophy of Science-WI or Philosophy of Medicine-WI	PHIL 09369 satisfies Humanistic Literacy; both satisfy WI requirement			3
PHYS 00220	Intro Mechanics				4
PHYS 00222 or PHYS 00221	Intro Electricity/Magnetism or Intro Thrmodyn/Flu/WVS/Optics				4
CHEM 06100	Chemistry I-RS	Satisfies Scientific Literacy and RS requirement			4
MATH 01130	Calculus I	Satisfies Quantitative Literacy			4

Subtotal: 19 sh

<sup>1</sup> The Rowan Core requirements are waived for transfer students with an earned A.A. or A.S. degree from a NJ community/county college.

<sup>2</sup> The Rowan Seminar requirement is waived for all students transferring 24 or more approved credits into Rowan University at the time of initial entry.

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## Major Requirements (77 sh)

### SUMMARY OF MAJOR REQUIREMENTS

- 16 sh of Foundational Courses
  - 21 sh of Mid- Level Courses
  - 23 sh of Upper-level Courses
  - 17 sh of BINF Restricted Electives
- 
- 77 sh total

### FOUNDATIONAL COURSES

Course #	Course Name	Course Attributes / Notes	Sem/Yr	Grade	Credits
CHEM 06101	Chemistry II				4
MATH 01131	Calculus II				4
MCB 01101	Foundations in Biology for Biomedical Sciences I				4
MCB 01102	Foundations in Biology for Biomedical Sciences II				4
<b>Subtotal: 16 sh</b>					

### MID-LEVEL COURSES

Course #	Course Name	Course Attributes / Notes	Sem/Yr	Grade	Credits
BINF 05250	Intro to Bioinformatics				3
CHEM 07200	Organic Chemistry I				4
CHEM 07201	Organic Chemistry II				4
CS 04103	Comp. Sci. & Program				4
CS 04225	Principles of Data Structures				3
STAT 02284	Statistics for Biomed				3
<b>Subtotal: 21 sh</b>					

### UPPER-LEVEL COURSES

Course #	Course Name	Course Attributes / Notes	Sem/Yr	Grade	Credits
BINF 05355	Bioinformatics – Biological Applications				3
BINF 07399	Bioinformatics – Biochemical Applications				3
BIOL 22335	Advanced Genetics				4
CHEM 07348	Biochemistry				4
CS 01205	Comp Lab Techniques				3
CS 04301	Bioinformatics – Computational Aspects				3
TBS 01220 or CHEM 05440 or BIOL 01475	Translational Biomedical Research I or Chemistry Research or Biology Lab/Field research				3
<b>Subtotal: 23 sh</b>					

### BINF RESTRICTED ELECTIVES

Choose five courses in consultation with advisor. At least two Restricted Electives must be 4 sh lab courses, minimum of 17 sh total.

	Course #	Course Name	Course Attributes / Notes	Sem/Yr	Grade	Credits
<input type="radio"/>	BIOL 01310	Advanced Evolution				4
<input type="radio"/>	BIOL 01430	Advanced Cell Biology				4
<input type="radio"/>	BIOL 01445	Special Topics in Biological Sciences -WI	Satisfies WI requirement			3
<input type="radio"/>	BIOL 01475	Biology Lab / Field Research				3
<input type="radio"/>	BIOL 01405	Conversation Biology				4
<input type="radio"/>	BIOL 01428	Developmental Biology				4
<input type="radio"/>	BIOL 11330	Microbiology				4
<input type="radio"/>	BIOL 11405	Environmental Microbiology				4
<input type="radio"/>	BIOL 20310	Advanced Ecology				4
<input type="radio"/>	CHEM 07407	Advanced Biochemistry Lecture				3
<input type="radio"/>	CHEM 07409	Advanced Biochemistry Laboratory				2
<input type="radio"/>	CHEM 07410	Medicinal Chemistry				3
<input type="radio"/>	CHEM 07431	Advanced Topics in Biochemistry				3

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	Course #	Course Name	Course Attributes / Notes	Sem/Yr	Grade	Credits
<input type="radio"/>	CHEM 08305	Biophysical Chemistry				4
<input type="radio"/>	CHEM 08410	Survey of Molecular Modeling Methods				3
<input type="radio"/>	CS 04113	Intro to Object Oriented Programming				4
<input type="radio"/>	CS 04114	Object Oriented Programming & Data Abstraction				4
<input type="radio"/>	CS 06205	Computer Organization				3
<input type="radio"/>	CS 06390	Introduction to Systems Simulation & Modeling				3
<input type="radio"/>	CS 07370	Introduction to Information Visualization				3
<input type="radio"/>	MCB 01201	Molecular Biology Methods				4
<input type="radio"/>	MCB 01306	Translational Cell Biology Lecture				3
<input type="radio"/>	MCB 01307	Translational Cell Biology Lab				2
<input type="radio"/>	MCB 01320	Introduction to Virology				4
<input type="radio"/>	MCB 01334	Medical Biochemistry				3
<input type="radio"/>	MCB 01414	General Aspects of Infectious Agents				3
<input type="radio"/>	MCB 01421	Fundamentals in Cell Culture Techniques				3
<input type="radio"/>	MCB 10345	Human Physiology				4
<input type="radio"/>	MCB 11338	Immunology				4
<input type="radio"/>	MCB 22410	Concepts of Human Genetics				4
<input type="radio"/>	MCB 22450	Molecular Genetics				4
<input type="radio"/>	TBS 01230	Translational Biomedical Research II				3
<b>Subtotal: 17 sh</b>						

## Free Electives (15 sh)

*Students should choose Free Electives that satisfy any Rowan Core or Rowan Experience requirements that are not fulfilled by Major or Non-Program courses.*

Course #	Course Name	Course Attributes / Notes	Sem/Yr	Grade	Credits
<b>Subtotal: 15 sh</b>					

**Total Program Credits Required for this Major / Degree: 120 SH**