

B.S. in Bioinformatics

Academic Program Guide for **New First-Year Students** (Effective Fall 2020)

Department of Molecular & Cellular Biosciences (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) 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 Non-Program and Major requirements.

Rowan Core Requirements¹

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 Attribute² *Recommendation from major:* COMP 01111 College Composition I-RS (3 sh counted under Rowan Core)

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	Satisfies Scientific Literacy			4
MATH 01130	Calculus I	Satisfies Quantitative Literacy			4
					Subtotal: 19 sh

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

² 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 (78 sh)

SUMMARY OF MAJOR REQUIREMENTS

- 16 sh of Foundational Courses
 - 24 sh of Mid- Level Courses
 - 21 sh of Upper-level Courses
 - 17 sh of BINF Restricted Electives
-
- 78 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
Subtotal: 16 sh					

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	Computer Science and Programming				4
CS 01205	Comp Lab Techniques				3
CS 04225	Principles of Data Structures				3
STAT 02284	Statistics for Biomed				3
Subtotal: 24 sh					

UPPER-LEVEL COURSES

Course #	Course Name	Course Attributes / Notes	Sem/Yr	Grade	Credits
BINF 05355	Bioinformatics – Biological Applications				3
BINF 05360	Programming for Molecular Biology				3
BINF 07399	Bioinformatics – Biochemical Applications				3
MCB 22450	Molecular Genetics				4
CHEM 07348	Biochemistry				4
CS 04301	Bioinformatics – Computational Aspects				3
TBS 01220 or CHEM 05440 or BIOL 01475	Translational Biomedical Research I or Chemistry Research I or Biology Lab/Field Research				3
TBS 01450	Biomedical Frontiers Seminar I				1
Subtotal: 21 sh					

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 01475	Biology Lab / Field Research				3
<input type="radio"/>	BIOL 01405	Conservation 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

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<input type="radio"/>	CHEM 07431	Advanced Topics in Biochemistry				3
<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 (laboratory)				2
<input type="radio"/>	MCB 01320	Introduction to Virology				4
<input type="radio"/>	MCB 01334	Medical Biochemistry				3
<input type="radio"/>	MCB 01407	Molecular Microbiology				4
<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"/>	BIOL 22335	Advanced Genetics				4
<input type="radio"/>	TBS 01230	Translational Biomedical Research II				3
<input type="radio"/>	MCB 01308	Special Topics in Mol Cell Biosciences- WI	Satisfies WI requirement			3
<input type="radio"/>	TBS 01451	Biomedical Frontiers Seminar I				1

Subtotal: 17 sh

Free Electives (14 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

Subtotal: 14 sh

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