

# B.S. in Molecular & Cellular Biology

## Academic Program Guide for **New First-Year Students** (Effective Fall 2020) 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 (3 sh counted under non-program)

(SCIL) Scientific Literacy                      *Recommendation from major:* CHEM 06100 (3 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 counted under non-program)

(RS) Rowan Seminar Attribute<sup>2</sup>              *Recommendation from major:* COMP 01111 College Composition I-RS (3 sh counted under Rowan Core Requirements)

### 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
PHYS 00220 or PHYS 00210	Intro Mechanics or Physics I	PHYS 00220 satisfies Scientific Literacy			4
PHYS 00222 or PHYS 00211	Intro Electricity / Magnetism or Physics II				4
CHEM 06100	Chemistry I	Satisfies Scientific Literacy			4
MATH 01130	Calculus I	Satisfies Quantitative Literacy			4
PHIL 09369 or PHIL 09376	Philosophy of Science-WI or Philosophy of Medicine-WI	PHIL 09369 satisfies Humanistic Literacy; both satisfy WI requirement			3
					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 (65-66 sh)

### SUMMARY OF MAJOR REQUIREMENTS

- 16 sh of Foundational Courses
  - 18-19 sh of Mid-Level Courses
  - 17 sh of Upper-Level Courses
  - 14 sh of MCB Restricted Electives
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- 65-66 sh total

### FOUNDATIONAL COURSES

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

### MID-LEVEL COURSES

Course #	Course Name	Course Attributes / Notes	Sem/Yr	Grade	Credits
CHEM 07200	Organic Chemistry I				4
CHEM 07203	Organic Chemistry II for BMS				4
MCB 10345 or BINF 07250	Human Physiology or Intro to Bioinformatics				4 or 3
MCB 01201	Molecular Biology Methods				4
STAT 02284	Statistics for Biomed Sciences				3
					Subtotal: 18-19 sh

### UPPER-LEVEL COURSES

Course #	Course Name	Course Attributes / Notes	Sem/Yr	Grade	Credits
MCB 01333 or CHEM 07348	Cellular Biochemistry or Biochemistry				4
MCB 01306	Translational Cell Biology (Lecture)				3
MCB 01307	Translational Cell Biology Lab				2
TBS 01220 or BIOL 01475 or CHEM 05440	Translational Biomedical Research I or Biology Lab/Field Research or Chemistry Research I				3
MCB 22450	Molecular Genetics				4
TBS 01450	Biomedical Frontiers Seminar I				1
					Subtotal: 17 sh

### MCB RESTRICTED ELECTIVES

Choose at least four courses in consultation with advisor. At least 2 courses must be from Bank 1, at least 2 lecture+lab courses (4 sh) overall, a minimum of 14 sh total.

Course #	Course Name	Course Attributes / Notes	Sem/Yr	Grade	Credits
Course Options – Bank 1					
<input type="radio"/>	BINF 05355	Bioinformatics – Biological Applications			3
<input type="radio"/>	BINF 05360	Programming for Molecular Biology			3
<input type="radio"/>	BINF 07399	Bioinformatics – Biochemical Applications			3
<input type="radio"/>	BIOL 01428	Developmental Biology			4
<input type="radio"/>	BIOL 11330	Microbiology			4
<input type="radio"/>	BIOL 22335	Advanced Genetics			3
<input type="radio"/>	BIOL 01445	Special Topics in Biological Sciences -WI	Special permission via advising based on topic		3
<input type="radio"/>	CHEM 07357	Chemical Biology			3
<input type="radio"/>	CHEM 07407	Advanced Biochemistry (Lecture)			3

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<input type="radio"/>	CHEM 07464	Advanced Organic Chemistry I (Lecture) - WI	Satisfies WI requirement			3
<input type="radio"/>	CHEM 07431	Advanced Topics in Biochemistry	Special permission via advising based on topic			3
<input type="radio"/>	CHEM 08410	Survey of Molecular Modeling Methods				3
<input type="radio"/>	CHEM 09420	Supramolecular Chemistry				3
<input type="radio"/>	MCB 01320	Introduction to Virology				4
<input type="radio"/>	MCB 01360	Biophysics I				4
<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				4
<input type="radio"/>	MCB 10345	Human Physiology	<i>Cannot double-count with required courses</i>			4
<input type="radio"/>	MCB 11338	Immunology				4
<input type="radio"/>	MCB 22410	Concepts in Human Genetics				3
<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 01315	Biomedical Technologies I				3
<input type="radio"/>	TBS 01451	Biomedical Frontiers Seminar II				1
<b>Course Options – Bank 2</b>						
<input type="radio"/>	BINF 07250	Intro to Bioinformatics	<i>Cannot double-count with required courses</i>			3
<input type="radio"/>	BIOL 07310	Comparative Vertebrate Anatomy				4
<input type="radio"/>	CHEM 07410	Medicinal Chemistry				3
<input type="radio"/>	CHEM 07490	General Aspects of Pharmacology				3
<input type="radio"/>	CHEM 07492	Pharmaceutical Chemistry				3
<input type="radio"/>	MCB 01334	Medical Biochemistry				3
<input type="radio"/>	MCB 10481	Cellular & Molecular Neuroscience				3
<input type="radio"/>	PSY 10315	Physiological Psychology				3
						Subtotal: 14 sh

## Free Electives for this Major/Degree (26-27 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: 26-27 sh

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