

Accelerated Bachelor of Science in Biological Sciences Master of Science in Cell and Molecular Biology Dual Degree Program

Program Details

The accelerated BS/MS dual degree program allows qualified, highly motivated students to complete a bachelor's and master's degrees in five years rather than the normal six. The courses necessary for graduation consist of a combination of the required core courses for the BS in Biological Sciences degree, including all mandatory Rowan experience and general education courses as well as the full 36 credits for the MS in Cell and Molecular Biology degree. Students begin taking graduate courses in the spring semester of their senior year. Students enrolled in this program take 18 fewer credits to receive both a BS in Biological Sciences and a MS in Cell and Molecular Biology than the number required to obtain both degrees separately.

Admission Criteria

- Matriculated undergraduate student in Biological Sciences at Rowan University
- Minimum overall GPA of 3.0 in undergraduate coursework
- A minimum of C or better grade in all Biological Science courses for the BS and a minimum of B or better grade in the MS courses.
- Official GRE General Exam score (generally taken in fall semester of junior year)
- One letter of recommendation/nomination from a faculty member in the Rowan Department of Biological Sciences
- Online GSBS application including personal statement and application fee (https://adminweb.rowan.edu/PROD/bwskalog.P_DisplLoginNon)

Application

Applicants to the accelerated program will submit all application materials to the GSBS admissions committee by January 15 of their junior year.

Admission

Applications will be reviewed by the GSBS admissions committee and students will be notified by February 1.

Satisfactory Progress toward Graduation

Students will be expected to maintain satisfactory progress through the program. Satisfactory progress is defined as:

- Completion of the required Cell and Molecular Biology courses at the end of fourth year of study.
- Earning at least a grade of B in all graduate courses taken during that period.
- Maintaining full time student status during the entire 5 years of the program (minimum enrollment of 12 semester hours of undergraduate courses; 9 semester hours of graduate courses).

Any student who fails to maintain satisfactory progress will be dismissed from the graduate program. Students with extenuating circumstances may request an exception to these requirements by obtaining written approval from the GSBS Executive Council and the Undergraduate Advisor as well as meeting other required criteria per University policy.

Dismissal from the Graduate Program

The following provisions apply to students who are dismissed **or** opt-out of the MS degree program.

- Up to 18 credits of MS Cell and Molecular Biology coursework can be applied as free-electives toward the BS in Biological Sciences degree.
- If the student has not earned enough credits to receive a BS in Biological Sciences, he/she will be re-admitted into the BS in Biological Sciences program subject to program requirements.
- Any additional credits necessary to reach the 120 credits required for the BS in Biological Sciences degree must be taken as traditional undergraduate coursework at the Glassboro campus.

Graduation

To graduate from the accelerated BS in Biological Sciences/MS in Cell and Molecular Biology dual degree program, students must:

- Complete all requirements for the Accelerated BS in Biological Sciences.
- Complete all requirements for the Accelerated MS in Cell and Molecular Biology.
- Maintain satisfactory progress through the program.

Upon completion of these requirements, students must apply to receive simultaneously a Bachelor of Science in Biological Sciences and a Master of Science in Cell and Molecular Biology. These degrees are awarded as separate diplomas.

Tuition Costs

Students enrolled in the accelerated BS/MS Program will pay undergraduate tuition and fees for all undergraduate courses and graduate tuition and fees for all GSBS graduate courses. Students will not be allowed to take GSBS graduate courses at the undergraduate rate. Students must maintain full time student status during the entire 5 year program.

Structure of Program

The courses necessary for graduation consist of a combination of the required core and upper-level courses for the BS in Biological Sciences degree, including all mandatory Rowan experience and general education courses (102 hours) as well as the full 36 credits for the MS in Cell and Molecular Biology degree. Students begin taking graduate courses in the spring semester of their senior year and 18 credits of the MS in Cell and Molecular Biology coursework are applied toward the required 120 credits for the BS in Biological Sciences degree. The dual degree program requires 138 credits compared to 156 credits if the BS and MS were earned independently.

Students have the option to participate in a novel research project under the supervision of a Rowan faculty member for two semesters with credit anytime from year 1 through fall semester of year 4.

Course requirements for accelerated BS in Biological Sciences degree

ROWAN EXPERIENCE REQUIREMENTS (required of all Rowan students):

Artistic and Creative Experience (ACE)

Literature (LIT)

Multicultural/Global (M/G)

Public Speaking (PS)

Rowan Seminar (RS)

Writing Intensive (WI). The writing intensive course must be taken at Rowan.

Composition II or its equivalent must be completed prior to enrollment in a WI course.

The Program requires majors to take Philosophy of Science (PHIL 09369: M/G, WI, HHL) or Philosophy of Medicine (PHIL 09440: WI, HHL) in the Department of Philosophy and Religion.

GENERAL EDUCATION REQUIREMENTS (38 credits):

Communication:

COMP 01.101 College Composition I
COMP 01.102 College Composition II

Science and Mathematics:

MATH 01.130 Calculus I
STAT 02.280 Biometry

Social and Behavior Sciences:

2 courses from the Social and Behavioral Sciences Bank

History, Humanities, and Language:

PHIL 09.369 Philosophy of Science or PHIL 09.440 Philosophy or Medicine
1 course from the History, Humanities, and Language Bank

12 credits in Non-Program Electives (including Public Speaking and an ACE elective)

ACCELERATED BS in BIOLOGICAL SCIENCES COURSE REQUIREMENTS:

A. Common Core (40 credits):

BIOL 01.104 Biology 1
BIOL 01.106 Biology 2
BIOL 01.203 Biology 3
BIOL 01.204 Biology 4
CHEM 06.1 00 Chemistry I
CHEM 06.1 01 Chemistry II
CHEM 07.200 Organic Chemistry I
CHEM 07.201 Organic Chemistry II
PHYS 00.210 Physics I (w/o calculus)
PHYS 00.211 Physics II (w/o calculus)

B. Required courses (8 credits)

BIOL 22.335 Genetics
CHEM 07.348 Biochemistry (with lab)

C. Elective courses (16 credits) – take 4 of the courses listed below:

BIOL 11.330 Microbiology.
BIOL 11.338 Immunology
BIOL 01.430 Cell Biology
BIOL 01.428 Developmental Biology
BIOL 22.410 Concepts in Human Genetics
BIOL 22.450 Molecular Genetics

D. Free electives (18 credits total)

CMB courses taken as part of the accelerated MS program will fulfill the required free elective credits.

Course requirements for the MS in Cell and Molecular Biology:

Core Course (4 credits)

CMB 00702 Molecular Biology of the Cell

Required Skills Courses (8 credits):

CMB 00801 Bioethics in Science and Medicine

CMB 00802 Experimental Design

CMB 00803 Scientific Writing

CMB 00804 Critical Readings in Cell & Molecular Biology

Required Research (17 credits)

CMB 00682 Lab rotation C- MS CMB

CMB 00683 Lab rotation D- MS CMB

CMB 00690 Thesis Research/MS

CMB 00699 MS Thesis Continuation (two semesters- no tuition, only fees)

CMB 00809 Department Seminar Series

Alternate Focus Courses: two of the following are required (4 credits)*

CMB 00805 Cell Culture and Stem Cells

CMB 00806 Graduate Genetics

CMB 00808 Molecular Oncology

CMB 00810 Biomolecular Interactions

**The available Alternate Focus Courses are subject to change in response to student and faculty interests. If a student has a specific interest in a topic covered by a course offered by another GSBS program (MBS or MPI), this course may be substituted for one Alternate Focus Courses with permission of the student's Advisory Committee and the GSBS Executive Council:*

Courses from other GSBS programs

MBS 00602 Antimicrobial Drugs: Mechanisms of Action and Resistance

MBS 00603 Basic Immunology

MBS 00604 Cancer Chemotherapy

MBS 00605 Developmental Biology

MBS 00606 Essential Neuroscience

MBS 00609 Mechanisms of Disease

MBS 00610 Microbiology

MBS 00611 Pathophysiology of the Cardiovascular System

MBS 00612 Principles of Pharmacology

MPI 00504 Topics in Molecular Pathology and Immunology

MPI 00601 Techniques in Molecular Diagnostics

Example sequence of course work for the BS/MS program.

Fall Year 1 (1st semester)		Spring Year 1 (2nd semester)	
BIOL 01104: Biology 1	4	BIOL 01106: Biology 2	4
CHEM 06100: Chemistry I	4	CHEM 06101: Chemistry II	4
MATH 01130: Calculus I	4	Gen Ed - SBS	3
COMP 01111: College Comp I	3	COMP 01112: College Comp II	3
<i>Term Total</i>	15	<i>Term Total</i>	14
Fall Year 2 (3rd semester)		Spring Year 2 (4th semester)	
BIOL 01203: Biology 3	4	BIOL 01204: Biology 4	4
CHEM 07200: Organic Chemistry I	4	CHEM 07201 : Organic Chemistry II	4
CMS 04205: Public Speaking	3	STAT 02280: Biometry	4
Gen Ed – HHL (Literature)	3	Non-program elective	3
<i>Term Total</i>	14	<i>Term Total</i>	15
Fall Year 3 (5th semester)		Spring Year 3 (6th semester)	
BIOL 22335: Genetics	4	Biology 300 or 400-level elective	4
Biology 300 or 400-level elective	4	CHEM 07348: Biochemistry	4
PHYS 00210: Physics I	4	PHYS 00211: Physics II	4
Non-program elective (ACE)	3	PHIL 09369: Phil. Sci. MG/WI/HHL	3
<i>Term Total</i>	15	<i>Term Total</i>	15
Fall Year 4 (7th semester)		Spring Year 4 (8th semester) GSBS courses (including summer)	
Biology 300 or 400-level elective	4	CMB 00302: Molecular Biology of Cell	4
Biology 300 or 400-level elective	4	CMB 00803 : Scientific Writing (<i>even yr</i>) or CMB 00802: Experimental Design (<i>odd yr</i>)	2
BIOL 01445: Special Topics in Biological Sciences or BIOL 01475: Biology Lab/Field Research	3	CMB 00682/3: Lab rotations C/D	2
Ged Ed - SBS	3	CMB 00809: Department Seminar	1
		CMB 00690: Thesis Research (<u>summer</u>) (Formation of Advisory Committee)	5
<i>Term Total</i>	14	<i>Term Total (graduate)</i>	14
Fall Year 5 (9th semester)	GSBS	Spring Year 5 (10th semester)	

courses		GSBS courses	
CMB 00805: Cell Culture & Stem Cells (<i>even yr</i>) or CMB 00806: Graduate Genetics (<i>odd yr</i>)	2	CMB 00808: Molecular Oncology (<i>even yr</i>) or CMB 00810: Biomolecular Interactions (<i>odd yr</i>)	2
CMB 00804 Critical Readings	2	CMB 00803 : Scientific Writing (<i>even yr</i>) or CMB 00802: Experimental Design (<i>odd yr</i>)	2
CMB 00809 Department Seminar Series	1	CMB 00809: Department Seminar	1
		CMB 00801: Bioethics in Science and Medicine	2
CMB 00699 Thesis Continuation (Thesis Proposal Presentation)	5	CMB 00699 Thesis Continuation (Thesis Defense)	5
<i>Term Total (graduate)</i>	10	<i>Term Total (graduate)</i>	12

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