ACCELERATED DUAL-DEGREE BS IN BIOLOGY/MS IN MOLECULAR AND CELL BIOLOGY (3+1)

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For highly qualified students, the Accelerated Dual-Degree BS in Biology/MS in Molecular and Cell Biology (3+1) provides an opportunity for students to achieve both a Bachelor of Science in Biology and a Master of Science within the field of Molecular and Cell Biology within a 4-year time frame typically associated with only an undergraduate education. The 3+1 program provides an excellent foundation for students intending to pursue studies in professional healthcare fields and doctoral programs. It also offers a competitive edge for students wishing to pursue a career in biotechnology and biopharmaceutical industries.

The requirements and policies for the undergraduate degree are the same as described on the Bachelor of Science in Biology (http://catalog.qu.edu/arts-sciences/biological-sciences/biology-bs/) page, except that students in the 3+1 combined BS/MS program are expected to maintain a GPA of at least 3.00 at the end of each school year for continued participation in the program. The requirements and policies for the graduate degree are the same as described on the Master of Science in Molecular and Cell Biology (http://catalog.qu.edu/graduate-studies/arts-sciences/molecular-cell-biology-ms/) page.

Students in the 3+1 accelerated dual degree program in biology/MCB must meet the following requirements. The minimum number of credits required for a Bachelor of Science degree is 120. The minimum number of credits required for a Master of Science in molecular and cell biology is 34.

Code	Title	Credits
Biological Science Core Requirements		
BIO 150 & 150L	General Biology for Majors and General Biology for Majors Laboratory	4
BIO 151 & 151L	Molecular and Cell Biology and Genetics and Molecular and Cell Biology and Genetics Lab	4
BIO 252 & 252L	Ecology and Biodiversity and Ecology and Biodiversity Laboratory	4
BIO 298	Research Methods in Biology	3
Biology Electives [1]		
Select a minimum of one course from each of the following categories:		10-16
Molecular and Cellular Electives (3-4 credits): [1]		
BIO 240	Cellular Communication	
BIO 282 & 282L	Genetics and Genetics Lab	
BIO 317 & 317L	Developmental Biology and Developmental Biology Lab	
BIO 346 & 346L	Cell Physiology and Cell Physiology Lab	
BIO 365	Cancer Biology	
BIO 382 & 382L	Human Genetics and Human Genetics Lab	
BIO 471 & 471L	Molecular Genetics and Molecular Genetics Lab	
Organismal Electives (3-4 credits) [1]		
BIO 215	Environmental Biotechnology	
BIO 300	Special Topics	
BIO 323 & 323L	Invertebrate Zoology and Invertebrate Zoology Lab	
BIO 324 & 324L	Vertebrate Zoology and Vertebrate Zoology Lab	
BIO 328 & 328L	Human Clinical Parasitology and Human Clinical Parasitology Lab	
BIO 352 & 352L	Botany and Botany Lab	
BIO 358 & 358L	Conservation Biology and Conservation Biology Lab	
BIO 375 & 375L	Physiological Models for Human Disease and Physiological Models for Human Disease Lab	
BIO 383	Evolution	
Physiology Electives (3-4 credits): [1]		
BIO 211 & 211L	Human Anatomy and Physiology I and Human Anatomy and Physiology Lab I	
BIO 212 & 212L	Human Anatomy and Physiology II and Human Anatomy and Physiology II Lab	
BIO 225 & 225L	Physiological Diversity and Physiological Diversity Lab	
BIO 329	Neurobiology	
BIO 350	Cardiovascular Physiology	
Experiential Learning (1-4 credits):		
BIO 385	Explorations in Biology	
BIO 491	Independent Research in Biological Science	
BIO 492	Independent Research in Biological Sciences	
BIO 493	Independent Research in Biological Sciences	
BIO 494	Independent Research in Biological Sciences	
Physical Science Core Requirements		
CHE 110 & 110L	General Chemistry I and General Chemistry I Lab	4
CHE 111 & 111L	General Chemistry II and General Chemistry II Lab	4
CHE 210 & 210L	Organic Chemistry I and Organic Chemistry I Lab	4
CHE 211 & 211L	Organic Chemistry II and Organic Chemistry II Lab	4

PHY 110 & 110L	General Physics I and General Physics I Lab	4
PHY 111 & 111L	General Physics II and General Physics II Lab	4
Modern Language Requirement [2]		**3-6**
University Curriculum [3]		**46**
Open Undergraduate Electives [4]		**9**
Graduate Courses [5]		
BIO 515	Advanced Biochemistry	4
BIO 568	Molecular and Cell Biology	4
BIO 571	Molecular Genetics	4
BIO 605	DNA Methods Laboratory	4
BIO 606	Protein Methods Laboratory	4
BIO 675	Comp Exam in Molecular and Cell Biology	2
Open Graduate Electives		12
Total Credits		**141-150**

1. **Biology Electives:** Some biology courses have no laboratory component and are 3-credit rather than 4-credit courses. Co-requisite courses must be taken simultaneously.
2. **College of Arts and Sciences Modern Language Requirement:** All CAS students (both bachelor of science and bachelor of arts) must complete one modern language through the 102 level. Modern language courses may also count toward the UC Personal Inquiry II requirement. Students who have taken a language in high school should take the modern language placement test for that language. Students with placement scores at the 201 level or higher have demonstrated language competency and thus have passed out of the language requirement.
3. **University Curriculum Requirement:** All students must complete the 46 credits of the University Curriculum (https://catalog.qu.edu/academics/university-curriculum/). A minimum of MA 141 is required for the Bachelor of Science degree in Biology. The following courses taken for the Biology major double count as UC requirements: BIO 150 & 150L, BIO 151 and 151L, CHE 110 & 110L, CHE 111 & 111L, and PHY 110 & 110L.
4. **Open Undergraduate Electives:** Students take open electives for a total of 120 credits required for the Bachelor of Science degree in Biology. Many students pursue other interests by selecting electives in fulfillment of a minor.
5. **Graduate Courses:** Students take a total of 34 graduate credits required for the Master of Science degree in Molecular and Cell Biology.

The Accelerated Dual-Degree BS/MS program is designed for outstanding applicants. Students are offered acceptance into the program upon admission to Quinnipiac University.

Admission Requirements: College of Arts and Sciences

The requirements for admission into the undergraduate College of Arts and Sciences programs are the same as those for admission to Quinnipiac University.

Admission to the university is competitive, and applicants are expected to present a strong college prep program in high school. Prospective first-year students are strongly encouraged to file an application as early in the senior year as possible, and arrange to have first quarter grades sent from their high school counselor as soon as they are available.

For detailed admission requirements, including required documents, please visit the Admissions (http://catalog.qu.edu/general-information/admissions/) page of this catalog.

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Shown below is one of several possible paths through the curriculum. Students choose courses and follow a curriculum in consultation with their academic adviser; individual planning will vary based on a number of factors, including, for instance, Advanced Placement and/or transfer credits.

The minimum number of credits required for the undergraduate degree is 120, and the minimum number of credits required for the graduate degree is 34. At least 18 credits must be completed after conferral of the bachelor's degree and cannot be double counted.

Courses taken to fulfill the undergraduate Bachelor of Science in Biology are identical to those listed in the BS in Biology curriculum (https://catalog.qu.edu/arts-sciences/biological-sciences/biology-bs/#curriculumtext).

Courses to taken to fulfill the graduate Master of Science in Molecular and Cell Biology are identical to those listed in the MS in Molecular and Biology curriculum (https://catalog.qu.edu/graduate-studies/arts-sciences/molecular-cell-biology-ms/#curriculumtext).

Code	Title	Credits
Fall Semester		
Milestones: Earn 40 credits, meet with your advisor at least once a semester, a GPA of 3.0 or higher and a science GPA of 2.25 or higher.		
BIO 150 & 150L	General Biology for Majors and General Biology for Majors Laboratory	4
CHE 110 & 110L	General Chemistry I and General Chemistry I Lab	4
MA 140	Pre-Calculus [1]	3
EN 101	Introduction to Academic Reading and Writing	3
FYS 101	First-Year Seminar	3
Spring Semester		
BIO 151 & 151L	Molecular and Cell Biology and Genetics and Molecular and Cell Biology and Genetics Lab	4
CHE 111 & 111L	General Chemistry II and General Chemistry II Lab	4
MA 141	Calculus of a Single Variable [1]	3
EN 102	Academic Writing and Research	3
University Curriculum (UC) Course		3
Summer Session		
University Curriculum (UC) Course		3
Open Elective		3

Second Year		
Milestones: Earn 84 credits, a GPA of 3.0 or higher and a science GPA of 2.25 or higher. Meet with your advisor at least once per semester to discuss academic, experiential learning, career, and co-curricular opportunities.		
Fall Semester		
BIO 252 & 252L	Ecology and Biodiversity and Ecology and Biodiversity Laboratory [2]	4
or BIO 298	Research Methods in Biology	
CHE 210 & 210L	Organic Chemistry I and Organic Chemistry I Lab	4
Language at the 101 level		3
University Curriculum (UC) Course		3
J-Term		
Open Elective		3
Spring Semester		
BIO 298	Research Methods in Biology	3-4
or BIO 252 & 252L	Ecology and Biodiversity and Ecology and Biodiversity Laboratory	
Biology Elective		4
CHE 211 & 211L	Organic Chemistry II and Organic Chemistry II Lab	4
Language at the 102 level (Satisfies CAS Language Requirement)		3
University Curriculum (UC) Course		3
Summer Session		
University Curriculum (UC) Course		3
Open Elective		3
Third Year		
Milestones: Earn 120 UG credits, a GPA of 3.0 or higher and a science GPA of 2.25 or higher. Meet with your advisor at least once per semester. Participate in study abroad, complete internship or research opportunities.		
Fall Semester		
Biology Elective		3
BIO 571	Molecular Genetics	4
PHY 110 & 110L	General Physics I and General Physics I Lab	4
CAS 420	CAS Integrative Capstone	3
Open Electives		3
J-Term		
Open Elective		3
Spring Semester		
Biology Elective		4
BIO 515	Advanced Biochemistry	4
BIO 605	DNA Methods Laboratory	4
PHY 111 & 111L	General Physics II and General Physics II Lab	4
Summer Session		
Graduate Elective		3
Fourth Year		
Milestones: Earn 35 Graduate credits and a GPA of 3.0 or higher with a minimum grade of C in all graduate courses. Prepare for graduation.		
Fall Semester		
BIO 568	Molecular and Cell Biology	4
BIO 606	Protein Methods Laboratory	4
Graduate Elective		3
Spring Semester		
BIO 675	Comp Exam in Molecular and Cell Biology	2
Graduate Elective		4
Graduate Elective		3
Total combined credits		**143**

1 Initial placement in the English and mathematics courses is determined by placement exam and an evaluation of high school units presented. Students intending to pursue graduate or professional studies (medicine, dentistry, osteopathy or veterinary medicine) are advised to complete at least one semester of calculus. A minimum of MA 141 is required for the Bachelor of Science degree in Biology.

2 Students may take either BIO 252 and 252L or BIO 298 in either order or concurrently.