DUAL-DEGREE BS IN BIOCHEMISTRY/MS IN MOLECULAR & CELL BIOLOGY (4+1)

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The Dual-Degree BS in Biochemistry/MS in Molecular and Cell Biology (4+1) program is designed for highly motivated Biochemistry majors who are particularly interested in Molecular and Cell Biology. The MS in Molecular and Cell Biology 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 the biotechnology and pharmaceutical industries.

The requirements and policies for the undergraduate degree are the same as described on the Bachelor of Science in Biochemistry (http://catalog.qu.edu/arts-sciences/chemistry-physical-sciences/biochemistry-bs/) page. Upon satisfactory completion of the undergraduate curriculum requirements, students receive a Bachelor of Science in Biochemistry. Students complete graduate-level biology courses during their fourth year; 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 earn the MS in Molecular and Cell Biology upon satisfactory completion of all the graduate curriculum requirements.

Students who choose to pursue the Dual-Degree BS in Biochemistry/MS in Molecular and Cell Biology (4+1) should complete coursework in Biochemistry (CHE 315/L and CHE 316), Physical Chemistry (CHE 302/L), Instrumental Analysis (CHE 305/L), and a biology elective from the Molecular and Cellular category (http://catalog.qu.edu/arts-sciences/biological-sciences/biology-bs/#curriculumtext) by the end of their third year.

Shown below is one of several possible paths through the curriculum.

Students choose courses and follow a curriculum determined in consultation with their 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 undergraduate degree completion 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.

Code	Title	Credits
Fall Semester		
Milestones: Earn 30 credits, meet with your adviser at least once a semester and have a GPA of 2.00 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
EN 101	Introduction to Academic Reading and Writing (UC First Year Writing) [1]	3
FYS 101	First-Year Seminar (UC Foundations Inquiry)	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 (UC First Year Writing)	3
Second Year		
Milestones: Earn 60 credits and a GPA of 2.00 or higher. Meet with your adviser at least once per semester to discuss academic, experiential learning, career and co-curricular opportunities. Discuss 5-year program with advisor and Program Coordinator.		
Fall Semester		
PHY 110 & 110L	General Physics I and General Physics I Lab [7]	4
CHE 210 & 210L	Organic Chemistry I and Organic Chemistry I Lab	4
Language at the 101 level		3
University Curriculum (UC) Course		3
Spring Semester		
PHY 111 & 111L	General Physics II and General Physics II Lab	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
University Curriculum (UC) Course		3
Third Year		
Milestones: Earn 90 credits and a GPA of 2.00 or higher. Meet with your adviser at least once per semester. Participate in study abroad, complete internship or research opportunities. Formal application / admisson to 5-year program.		
Fall Semester		
CHE 315	Biochemistry I	3
CHE 301 & 301L	Physical Chemistry I and Physical Chemistry I Lab	4
CHE 215 & 215L	Analytical Chemistry and Analytical Chemistry Lab	4
Biology Elective [2]		3
Spring Semester		
CHE 316 & CHE 302L	Biochemistry II and Physical Chemistry II Lab	4
CHE 302 & 302L	Physical Chemistry II and Physical Chemistry II Lab	4

CHE 305 & 305L	Instrumental Analysis and Instrumental Analysis Lab	4
University Curriculum		3
University Curriculum		3
Fourth Year [4]		
Milestones: Earn 120 credits and a GPA of 2.00 or higher. Complete possible minor or double major and prepare for graduation. Bachelor's degree awarded May. [4]		
Fall Semester		
BIO 571	Molecular Genetics	4
CHE 475	Chemistry Seminar I	1
CHE 490	Chemistry Research I	3
Chemistry Elective		3
Open Elective		3
Spring Semester		
BIO 515	Advanced Biochemistry	4
BIO 605	DNA Methods Laboratory	4
CHE 476	Chemistry Seminar II	1
CHE 491	Chemistry Research II	3
CAS 420	CAS Integrative Capstone	3
Fifth Year		
Master's degree awarded May. [5, 6]		
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		3
Graduate Elective		4
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. A minimum of MA 141 is required for the Bachelor of Science degree in Biochemistry.
2. Undergraduate biology electives for the biochemistry major are chosen in consultation with the departmental adviser. A course from the Molecular and Cellular Biology category is strongly recommended, and can be found on the Biology qu.edu page (https://qu.edu/schools/arts-and-sciences/programs/bachelors-degree/biology/curriculum/).
3. Graduate full-time status: ≥9 credits; graduate part-time status: 5-8 credits. This course plan reflects the non-thesis track. For details about the thesis track, see the qu.edu page (https://www.qu.edu/schools/arts-and-sciences/programs/masters-degree/molecular-cell-biology/curriculum/).
4. BS: Earn 120 credits. Biochemistry majors must achieve a minimum grade of C- in all required chemistry, physics, biology and mathematics courses.
5. MS: Earn a minimum of 34 graduate credits with graduate GPA of 3.00 or higher.
6. A minimum of 18 graduate credits must be completed after UG degree conferral.
7. PHY 121 and PHY 122 may be substituted.

Interested biochemistry majors should speak to their academic adviser, contact program director Alexandre de Lencastre (alexandre.delencastre@qu.edu), and apply for the graduate program (+1 year) by March 30 of their third year using this application form (https://www.qu.edu/ugdualdegree/). A cumulative undergraduate#GPA of 3.00 is preferred.

Students are offered formal acceptance into the MS in Molecular and Cell Biology program after successful completion of the undergraduate degree.

Admission Requirements: College of Arts & Sciences

The requirements for admission into the undergraduate College of Arts & 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.