

BACHELOR OF SCIENCE IN CHEMISTRY

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Chemistry majors explore the world on the molecular level. Students gain knowledge about the wide range of properties and reactions of inorganic, organic and biological compounds. Lab courses enable you to carry out syntheses and analyze materials. You also get hands-on access to a sophisticated array of instruments, which include a variety of spectrophotometers and chromatographic systems, to help build confidence in your ability to solve complex problems in the field. You can individualize your experience by taking electives in specialized areas, such as environmental chemistry, or pursue a minor in a completely different but complementary field to meet your career goals.

We teach you to evaluate and interpret data, hone your analytical thinking skills and present the results of your scientific research to various audiences. Because of our small class sizes and highly accessible faculty, you'll get plenty of support and the personal attention you need. An independent research project strengthens the skills you develop in the classroom. Students are encouraged to pursue real-life work experience in the form of internships.

Your degree in chemistry qualifies you to work as a laboratory or research assistant in an academic, consumer product, pharmaceutical or industrial research or quality control laboratory upon graduation, but you'll also have the foundation to pursue an advanced degree in a specific area of chemistry or in other fields including medicine, pharmacy, veterinary medicine or law.

BS in Chemistry Curriculum

Initial placement in English and mathematics courses is determined by placement examinations and an evaluation of high school units presented. Students who do not place directly into MA 141 or MA 151 should take MA 140. MA 153 and MA 154 are strongly recommended.

Chemistry majors must maintain a minimum grade of C- in all required chemistry, physics and mathematics courses. Any required course not listed in the course descriptions may be considered for scheduling when the need arises. All 4-credit science courses have a laboratory component. Chemistry electives must be selected with the advice and approval of the department adviser. Open electives should be selected based upon student interests and career goals from offerings in all schools.

Students majoring in chemistry must complete the following requirements:

Code	Title	Credits
University Curriculum ¹		46
Modern Language Requirement		3-6
Chemistry 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
CHE 215 & 215L	Analytical Chemistry and Analytical Chemistry Lab	4
CHE 301 & 301L	Physical Chemistry I and Physical Chemistry I Lab	4
CHE 302 & 302L	Physical Chemistry II and Physical Chemistry II Lab	4
CHE 305 & 305L	Instrumental Analysis and Instrumental Analysis Lab	4
CHE 315 & 315L	Biochemistry I and Biochemistry I Lab	4
CHE 410	Inorganic Chemistry	3
CHE 420	Chemistry Integrative Capstone	3
CHE 475	Chemistry Seminar I	1
CHE 476	Chemistry Seminar II	1
CHE 490	Chemistry Research I	3
CHE 491	Chemistry Research II	3
Upper level CHE elective course ²		3
Cognate Courses ³		
MA 141	Calculus of a Single Variable ^{3,4}	3
PHY 110 & 110L	General Physics I and General Physics I Lab ^{3,5}	4
PHY 111 & 111L	General Physics II and General Physics II Lab ^{3,5}	4
Open electives ⁶		4-7

1

All students must complete the University Curriculum (<http://catalog.qu.edu/academics/university-curriculum/>) requirements.

2

Typically CHE 300.

3

Required courses, which support the chemistry major and may be used to satisfy requirements outside of the major.

4

MA 151 may be substituted for MA 141. MA 153 and MA 154 are also highly recommended but not required.

5

PHY 121 and PHY 122 may be substituted.

6

Students take open electives to fulfill the minimum number of credits for graduation. Number of credits may vary depending on foreign language and math placement scores. Some cognate course credits may count toward the University Curriculum requirements.

Minimum number of credits required for graduation is 120.

Student Learning Outcomes

Upon completion of the chemistry program, students will demonstrate the following competencies:

- Disciplinary Knowledge:** Develop a broad knowledge base of chemical principles in the areas of general, organic, analytical, inorganic, physical and biochemistry along with cognate knowledge in the areas of physics and mathematics.

- Laboratory Skills:** Develop relevant knowledge and hands-on skills to be able to work safely and independently in a chemistry laboratory setting to collect, record and evaluate experimental data including the utilization of both classical and instrumental techniques.
- Scientific Information Literacy:** Conduct relevant field-specific searches of scientific databases to locate research articles related to a topic or problem and gain experience in reading, interpreting and discussing research literature in the field.
- Research Experience:** Apply acquired knowledge and skills to investigate problems by working on independent mentored project(s) through a senior research project, independent research, internship(s) and/or summer research study.
- Critical Thinking and Problem Solving:** Apply knowledge and skills to solve increasingly complex conceptual and quantitative problems in the field.
- Scientific Communication:** Demonstrate competency in oral and written expression of the results of their laboratory work through written lab reports, poster presentations and seminar presentations.
- Career Advancement:** Be competitive for employment in an entry-level field-related position or acceptance into a graduate or professional degree program.

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.

Transfer into the Chemistry Major

Seamless Transfer Agreement with Gateway Community College (GCC), Housatonic Community College (HCC) and Norwalk Community College (NCC)

Under this Transfer Agreement, GCC, HCC and NCC graduates will be guaranteed admission into a bachelor's degree program with third year (junior) status at Quinnipiac University on the condition that they:

- Graduate with an associate in arts, an associate in science in business, College of Technology engineering science, nursing or an allied health degree with a minimum cumulative GPA of 3.00 (this may be higher in specific programs).
- Satisfy all other Quinnipiac University transfer admission requirements and requirements for intended major.

Quinnipiac University agrees to accept the general education embedded in these associate degree programs in accordance with Quinnipiac preferred choices for general education as meeting all the requirements of its undergraduate general education except for the Integrative Capstone Experience and where courses are encumbered by the major

(e.g., General Chemistry for the Disciplinary Inquiry Natural Science requirement for a chemistry major).

Suggested Transfer Curriculum for BS in Chemistry

A minimum of 60 credits is required for transfer into the BS in Chemistry program, and the following courses must be completed: general chemistry 1 and 2, calculus 1, organic chemistry 1 and 2 and physics 1 and 2 (calculus 2 is also highly recommended, but not required). Below is a recommended plan of study for the first two years prior to matriculation at Quinnipiac University.

Course	Title	Credits
First Year		
Fall Semester		
English I		3
General Chemistry I		4
Calculus I		4
Elective		3
Credits		14
Spring Semester		
English II		3
General Chemistry II		4
Calculus II		4
Elective		3
Elective		3
Credits		17
Second Year		
Fall Semester		
Organic Chemistry I		4
Physics I		4
Elective		3
Elective		3
Credits		14
Spring Semester		
Organic Chemistry II		4
Physics II		4
Elective		3
Elective		3
Elective		3
Credits		17
Total Credits		62

Shown below is one of many possible paths through the curriculum. Each student's individual academic plan is crafted in consultation with their academic adviser.

Code	Title	Credits
First Year		
Milestones: Earn 30 credits, meet with your adviser at least once a semester and have a GPA of 2.00 or higher.		
Fall Semester		
CHE 110 & 110L	General Chemistry I and General Chemistry I Lab	4

EN 101	Introduction to Academic Reading and Writing	3
FYS 101	First-Year Seminar	3
MA 140	Pre-Calculus	3
Foreign Language at the 101 level		3

Spring Semester

CHE 111 & 111L	General Chemistry II and General Chemistry II Lab	4
MA 141	Calculus of a Single Variable	3
EN 102	Academic Writing and Research	3
Foreign Language at the 102 level (Satisfies CAS Language Requirement)		3
University Curriculum course		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.

Fall Semester

CHE 210 & 210L	Organic Chemistry I and Organic Chemistry I Lab	4
PHY 110 & 110L	General Physics I and General Physics I Lab	4
University Curriculum course		3
University Curriculum course		3

Spring Semester

CHE 211 & 211L	Organic Chemistry II and Organic Chemistry II Lab	4
PHY 111 & 111L	General Physics II and General Physics II Lab	4
University Curriculum course		3
University Curriculum 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.

Fall Semester

CHE 301 & 301L	Physical Chemistry I and Physical Chemistry I Lab	4
CHE 410	Inorganic Chemistry	3
University Curriculum course		3
Open Electives		3
Open Elective		3

Spring Semester

CHE 302 & 302L	Physical Chemistry II and Physical Chemistry II Lab	4
CHE 215 & 215L	Analytical Chemistry and Analytical Chemistry Lab	4
Open Elective		3
Open Elective		3
Open Elective		1

Fourth Year

Milestones: Earn 120 credits and a GPA of 2.00 or higher. Complete possible minor or double major and prepare for graduation.

Fall Semester

CHE 315	Biochemistry I	3
CHE 315L	Biochemistry I Lab	1
CHE 475	Chemistry Seminar I	1
CHE 490	Chemistry Research I	3
Open Elective		3
Open Elective		3
Open Elective		1

Spring Semester

CHE 305 & 305L	Instrumental Analysis and Instrumental Analysis Lab	4
CHE 420	Chemistry Integrative Capstone	3
CHE 476	Chemistry Seminar II	1
CHE 491	Chemistry Research II	3
Advanced Chemistry Elective		3

Total Credits**120**