Biochemistry, BS

Website (http://www.northeastern.edu/biochemistry)

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Advising website (http://www.northeastern.edu/biochemistry)

Biochemistry focuses on the chemical processes occurring in the wide
variety of living systems and touches essentially all aspects of our own
lives. Our Northeastern program engages you in two integrated paths
to a career in biochemistry: rigorous course work that is designed to
prepare you to interpret the ever-expanding knowledge base and hands-
on learning that positions you to leverage cutting-edge technology to
solve fundamental problems in the chemistry of life.

After required basic course work in biochemistry, biology, chemistry,
physics, and mathematics, our majors select elective courses that
reflect many areas of biochemistry including neuroscience, bioorganic
chemistry, stem cell and regenerative biology, microbial biotechnology,
and systems biology and engineering.

In our interdisciplinary program, students take advantage of faculty-
mentored research guided by investigators from bioengineering, biology,
chemical engineering, chemistry, pharmaceutical sciences, physics,
psychology, and other academic units.

Northeastern’s signature co-op program provides complementary
opportunities in world-class biotechnology companies, hospitals, and
research facilities as close as Boston and as far as your global interest
takes you.

Our biochemistry program prepares students to enter the job market
directly or go on to graduate, medical, veterinary, dental, law, or business
school. Our graduates are qualified for a wide range of careers that span
academics, industry, government, and medicine, working in laboratory or
clinical research, regulation and quality control, production, marketing, or
information systems.

Academic Progression Standards

After four semesters in the major, students must have a grade-point
average (GPA) of at least 2.000 in all science and math courses and have
completed at least six of the following courses:

- BIOL 1107
- and BIOL 1108
- Foundations of Biology
  and Lab for BIOL 1107
- 5

- BIOL 2299
- Inquiries in Biological Sciences
- 4

- BIOL 2301
- Genetics and Molecular Biology
- and Lab for BIOL 2301
- 5

- BIOL 2309
- Biology Project Lab
- 4

- CHEM 1211
- General Chemistry 1
  and Lab for CHEM 1211
- 5

- CHEM 1212
- and CHEM 1212
- General Chemistry 2
  and Lab for CHEM 1214
- 5

- CHEM 2311
- Organic Chemistry 1
  and Lab for CHEM 2311
- 5

- CHEM 2312
- and CHEM 2312
- 5

Biochemistry Major Requirements

Introduction to College

- BIOL 1000
- Biochemistry at Northeastern
- 1

Biology Foundations

Foundations

- BIOL 1107
- and BIOL 1108
- Foundations of Biology
  and Lab for BIOL 1107
- 5

Inquiries

- BIOL 2299
- Inquiries in Biological Sciences
- 4

Techniques

- BIOL 2309
- Biology Project Lab
- 4

Genetics and Molecular Biology

- BIOL 2301
- Genetics and Molecular Biology
  and Lab for BIOL 2301
- 5

- BIOL 2302
- and Lab for BIOL 2302
- 5

General Chemistry 1

- CHEM 1211
- General Chemistry 1
  and Lab for CHEM 1211
- 5

- CHEM 1212
- and Lab for CHEM 1212
- 5

General Chemistry 2

- CHEM 2313
- Organic Chemistry 2
  and Lab for CHEM 2313
- 5

- MATH 1251
- Calculus and Differential Equations for
  Biology 1
- 4

- MATH 1252
- Calculus and Differential Equations for
  Biology 2
- 4

Students who transfer into the biochemistry major will be allowed two
semesters after entering the major to meet the minimum standards for
their class. Students who fail to meet the above standards will be placed
on departmental probation. Two consecutive semesters on departmental
probation will result in dismissal from the major.

To graduate with a major in biochemistry, a student must have a
cumulative GPA of 2.000 for all science and mathematics courses
required for the major.

No double majors are offered in biochemistry and biology, in biochemistry
and chemistry, or in biochemistry and behavioral neuroscience due to
similarity in course curricula. Students must maintain a minimum GPA
of 2.000 to remain in this program.

Program Requirements

Complete all courses listed below unless otherwise indicated. Also
complete any corequisite labs, recitations, clinicals, or tools courses
where specified and complete any additional courses needed beyond
specific college and major requirements to satisfy graduation
credit requirements.

University-Wide Requirements

All undergraduate students are required to complete the University-
Wide Requirements (http://catalog.northeastern.edu/undergraduate/
university-wide-requirements).

NUpath Requirements

All undergraduate students are required to complete the NUpath
Requirements (http://catalog.northeastern.edu/undergraduate/
university-academics/nupath).
Biochemistry, BS

Chemistry Courses
CHEM 1214 and CHEM 1215
Organic Chemistry 1
CHEM 2311 and CHEM 2312
Organic Chemistry 2
CHEM 2313 and CHEM 2314
Physical Chemistry
CHEM 3431 and CHEM 3432
Biochemistry Courses
BIOL 3611 and BIOL 3612
Biochemistry and Lab for CHEM 3431
CHEM 4620
Experiential Learning Introduction
EESC 2000
Capstone
BIOL 4701 or CHEM 4750

Biochemistry Breadth Courses
Biology and Chemistry Advanced Electives
Complete three courses for a total of at least 12 semester hours from biology and chemistry with a minimum of one course from each department. Up to 4 semester hours may be research in a biology or chemistry faculty lab from the list “Research Option” below.

Biology
BIOL 2311 to BIOL 5999
Chemistry
CHEM 2310 to CHEM 5999
Research Option
Up to 4 semester hours may be research in a biology or chemistry faculty lab:
- BIOL 4991: Research
- BIOL 4970: Junior/Senior Honors Project 1
- CHEM 4901: Undergraduate Research
- CHEM 4970: Junior/Senior Honors Project 1

Biochemistry Major Credit/GPA Requirements
Complete 94 semester hours in the major with a cumulative GPA of 2.000.
Due to overlap in course content, double majoring in biochemistry and biology, biochemistry and behavioral neuroscience, or biochemistry and chemistry is not permitted.

Program Requirement
136 total semester hours required

Plan of Study
Five Years, Three Co-ops in Summer 2/Fall

Year 1

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**Total Hours:** 139