**Overview**

Biochemistry is the branch of science that explores the structures and chemical processes of molecules in living organisms that interact to form cells, tissues, and whole organisms. The Biochemistry program at Queen's provides students with in-depth training in a wide range of important topics that are related to these processes, including the mechanisms of cancer progression, cellular communication, and the molecular and chemical basis of infection, inheritance, and disease. The program also offers opportunities for students to explore rapidly expanding fields in molecular genetics, metabolism of biomolecules, bioengineering, and regenerative medicine through hands-on training with professors in research labs.

The first two years of the program provide vital background preparation in Biology, Chemistry (organic, analytical, and physical), Molecular Biology, Math, and Statistical Analysis, to understand the molecules that make up all living things. In the upper years of the program, students receive in-depth exposure to all areas of Biochemistry and Molecular Biology, Cell Biology, including extensive hands-on laboratory experiences. The Biochemistry program has enough flexibility for students to take elective courses offered in other programs within the Faculty of Arts and Science, including the Life Sciences program, for which they are eligible.

The Department of Biomedical and Molecular Sciences is responsible for Biochemistry Plans (General/Minor (Science), Major, Specialization) and plays a primary role in the Life Sciences Plans (General/Minor (Science), Major, Specialization). For specific information related to the Biochemistry and Life Sciences Programs, please consult the Biochemistry Program and Life Sciences Program entries in the Calendar.

**Program Policies**

Normally, students pursuing entry into the fourth-year of the Biochemistry Major Plan require a minimum GPA of 2.5 in the core BCHM courses (BCHM 218 Molecular Biology, BCHM 313 Physical Biochemistry, BCHM 315 Proteins and Enzymes, BCHM 316 Metabolism, and BCHM 317 Introductory Biochemistry Laboratory) to access those fourth-year courses required to complete the Plan. However, due to the COVID-19 situation, the requirement for 2020/2021 has been modified so that the cumulative GPA (which would remain as a minimum of 2.5 for acceptance) is calculated from 12 Units in those core courses, rather than 18.

See Academic Regulations 2.4 and 2.6. (https://queensu-ca-public.courseleaf.com/arts-science/academic-regulations/)

Students wishing to continue in Biochemistry Specialization Plan (BCHM-P-BSH) (https://queensu-ca-public.courseleaf.com/arts-science/schools-departments-programs/biochemistry/biochemistry-specialization-science-bs-honours/) in their fourth-year must:

1. achieve a minimum GPA in the core BCHM courses (see above) of 2.9 and
2. acceptance into the Plan.

Students who secure a research project but do not attain the minimum GPA of 2.9 will not be allowed to enroll in BCHM 421 Advanced Biochemistry Laboratory I and BCHM 422 Advanced Biochem Lab II but will be allowed to complete the Biochemistry Major Plan.

**Laboratory Safety**

Departmental Safety Rules are strictly enforced. A standard white laboratory coat is required for all laboratory courses. Shoes must be closed at both heel and toe. Additional safety requirements will be described at the first laboratory in each laboratory-based course.

**Advice to Students**

Students should seek academic counseling from the staff in the Associate Dean’s office or from the counselor listed below.

<table>
<thead>
<tr>
<th>Course Prefix</th>
<th>Counsellor</th>
<th>Contact Information</th>
</tr>
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<tbody>
<tr>
<td>BCHM</td>
<td>John Allingham</td>
<td><a href="mailto:alinghj@queensu.ca">alinghj@queensu.ca</a></td>
</tr>
<tr>
<td>BCHM and LISC</td>
<td>Louise Winn</td>
<td><a href="mailto:lifesci@queensu.ca">lifesci@queensu.ca</a></td>
</tr>
</tbody>
</table>
Biochemistry Plans

The flagship program is the Biochemistry Specialization Plan (BSCH-P-BSH) (https://queensu-ca-public.courseleaf.com/arts-science/schools-departments-programs/biochemistry/biochemistry-specialization-science-bs-honours/), which is recommended for students who wish to gain in-depth training in modern experimental Biochemistry and Biochemical processes involved in human health and disease. This program culminates in an intensive fourth-year thesis research project. It equips students with a solid foundation for entry into a variety of science-based graduate programs. Students may access this Plan at the start of their fourth year, on securing a research project.

The Biochemistry Major Plan (BSCH-M-BSH) (https://queensu-ca-public.courseleaf.com/arts-science/schools-departments-programs/biochemistry/biochemistry-major-science-bs-honours/) is designed for those students who want comprehensive training in Biochemistry but may wish to pursue interests outside of experimental Biochemistry. This option provides flexibility for students to take a minor in another subject. To accommodate these interests there are opportunities for more elective credits in the final year of the program. Typically, students interested in pursuing alternate plans than graduate studies in experimental Biochemistry should enroll in this Plan.