



PROGRAM PLANNING GUIDE

ID:

Name: _____

Bachelor of Science

Biochemistry



Biochemistry is the study of all living systems at the molecular level. It looks at the chemical and physical basis of life and how these living systems interact with their environments. Biochemistry will help you develop a strong background in the basic sciences and extensive laboratory skills, while emphasizing the chemical and physical basis of life. As a biochemistry student, you will gain hands-on experience with the latest tools and technology used in chemistry, physics and biological sciences, such as molecular biology, protein crystallography and advanced biophysics.

What determines my program requirements?

Please refer to the Academic Calendar (www.ulethbridge.ca/ross/academic-calendar) for complete program information.

Calendar Year: 2024/2025 - Your calendar year is set to the academic year you are admitted (or readmitted) and you should follow the requirements for that year for the duration of your program.

Faculty/School: Faculty of Arts and Science (www.ulethbridge.ca/artsci)

Program(s): Bachelor of Science

Major(s): Biochemistry

Minor: A defined set of courses, designed to provide depth in a particular discipline, study in an interdisciplinary area, or focus on a theme-related topic. To learn more about optional minors see www.ulethbridge.ca/ross/minors.

Am I admissible to this program?

Admission: www.ulethbridge.ca/ross/admissions/undergrad

Transfer: www.ulethbridge.ca/ross/transfer-resources

When/How do I apply to the University?

Deadlines: www.ulethbridge.ca/ross/admissions/undergrad/deadlines

Step-by-Step: www.ulethbridge.ca/ross/admissions/step-by-step

Where can I find information on courses?

Course Catalogue: www.ulethbridge.ca/ross/courses

Registration Guide: www.ulethbridge.ca/ross/registration-guide

When can I register for classes?

Register early! (March for Summer and Fall; November for Winter)

Registration Dates: www.ulethbridge.ca/ross/registration-dates

How can I enhance my program?

Career Bridge: www.ulethbridge.ca/career-bridge

Co-op Education: www.ulethbridge.ca/career-bridge/co-operative-education

Honours Thesis: www.ulethbridge.ca/ross/undergraduate-thesis

Double Major: www.ulethbridge.ca/ross/double-major

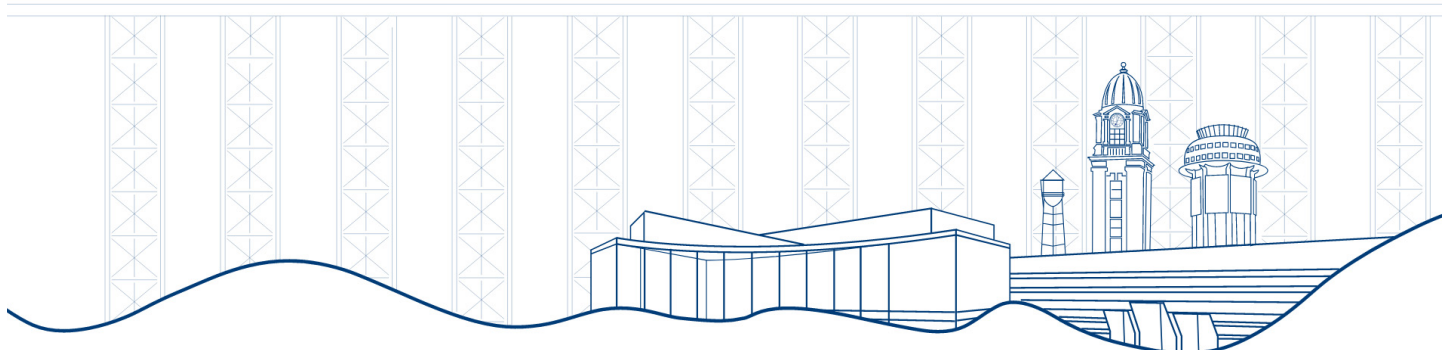
What supports are available to students?

Student Services: www.ulethbridge.ca/campus-life/student-services

Student Success Centre: www.ulethbridge.ca/student-success-centre

Accessible Learning: www.ulethbridge.ca/ross/alc

Counselling Services: www.ulethbridge.ca/counselling



Required courses and notes

Major Requirements (24 Courses)

- _____ 1. Biochemistry 2000 - Introductory Biochemistry
- _____ 2. Biochemistry 3100 - Proteins, Enzymes and Nucleic Acids
- _____ 3. Biochemistry 3300 - Bioenergetics and Metabolism
- _____ 4. Biology 1010 - Cellular Basis of Life
- _____ 5. Biology 1020 - Diversity of Life
- _____ 6. Biology 2000 - Principles of Genetics
- _____ 7. Biology 2300 - Cell Biology
- _____ 8. Biology 3000 - Gene Expression and Regulation
- _____ 9. Biology 3210 - Experimental Methods in Molecular and Cellular Biology
- _____ 10. Chemistry 1000 - General Chemistry I
- _____ 11. Chemistry 2000 - General Chemistry II
- _____ 12. Chemistry 2410 - Analytical Chemistry I
- _____ 13. Chemistry 2500 - Organic Chemistry I
- _____ 14. Chemistry 2600 - Organic Chemistry II
- _____ 15. Chemistry 2740 - Physical Chemistry I
- _____ 16. Physics 2130 - Waves, Optics and Sound
- _____ 17. **One of:**
 - _____ Mathematics 1560 - Calculus I
 - _____ Mathematics 1565 - Accelerated Calculus I
- _____ 18. **One of:**
 - _____ Mathematics 2560 - Calculus II
 - _____ Mathematics 2565 - Accelerated Calculus II
- _____ 19. **One of:**
 - _____ Physics 1000 - Introduction to Physics I (recommended)
 - _____ Physics 1050 - Introduction to Biophysics
 - _____ ¹Engineering 2060 - Engineering Mechanics
- _____ 20. **One of:**
 - _____ Biochemistry 3000 - Studies in Biochemistry (Series)
 - _____ Biochemistry 3700/Neuroscience 3700 - Introduction to Bioinformatics
 - _____ Interdisciplinary Studies 3200 - Genetically Engineered Machines
 - _____ Biology 3400 - Principles of Microbiology
- _____ 21.-22. **Two of:**
 - _____ Biochemistry 3000 - Studies in Biochemistry (Series)
 - _____ Biochemistry 3700/Neuroscience 3700 - Introduction to Bioinformatics
 - _____ Biochemistry 3990 - Independent Study
 - _____ Biochemistry 4990 - Independent Study
 - _____ Biochemistry 4995 - Undergraduate Thesis (6.0 credit hours)
 - _____ Biology 3005 - Genomes
 - _____ Biology 3110 - Cell Signalling
 - _____ Biology 3310 - Developmental Biology
 - _____ Biology 3400 - Principles of Microbiology
 - _____ ¹Biology 3420 - Animal Physiology
 - _____ ¹Biology 3460 - Plant Physiology
 - _____ Chemistry 3410 - Instrumental Methods of Analysis
 - _____ ¹Chemistry 3730 - Physical Chemistry II
 - _____ Chemistry 3830 - Inorganic Chemistry I
 - _____ Chemistry 3840 - Inorganic Chemistry II
 - _____ Chemistry 4000 - Advanced Chemistry (Series)
 - _____ Chemistry 4010 - Advanced Chemistry with Laboratory (Series)
 - _____ Interdisciplinary Studies 3200 - Genetically Engineered Machines
 - _____ Neuroscience 3600 - Fundamental Neurobiology

23.-24. Two of:

- _____ Any Biochemistry course at the 4000 level

- _____ Biology 4100 - Advances in Biotechnology
- _____ Biology 4130 - Medical Genomics
- _____ Biology 4140 - RNA Biology
- _____ Biology 4155 - Cannabis and Health
- _____ Biology 4180 - Natural Products
- _____ Biology 4230 - Molecular and Cellular Biology of Cancer

Notes

¹ This course has a prerequisite or corequisite that is not required for the major.

Applied Studies may not be counted as part of the minimum requirements for the major.

Students should choose appropriate 3000-level Biology or Chemistry courses to meet prerequisites for 4000-level courses in Biochemistry and/or Biology.

It is strongly recommended that students who are planning to pursue graduate studies in Biochemistry consider the Undergraduate Thesis option during the final two terms of their fourth year. Students interested in this option should consult potential supervisors at an early stage to discuss their background preparation. The Undergraduate Thesis course (Biochemistry 4995; 6.0 credit hours) will satisfy the first "Two of" list requirement, above.

Electives (16 Courses)

- _____ 25.-40. Sixteen additional courses (48.0 credit hours) chosen to complete program requirements
- _____ 25. _____
- _____ 26. _____
- _____ 27. _____
- _____ 28. _____
- _____ 29. _____
- _____ 30. _____
- _____ 31. _____
- _____ 32. _____
- _____ 33. _____
- _____ 34. _____
- _____ 35. _____
- _____ 36. _____
- _____ 37. _____
- _____ 38. _____
- _____ 39. _____
- _____ 40. _____

Recommended Course Sequence

Shown below is the recommended sequence of courses for your degree. Consult timetables for course offerings, prerequisites, and corequisites before registering each term as some courses may have limited offerings (ie. once a year, alternating years, or only offered in the Fall or Winter terms).

Consult with an Academic Advisor in your faculty if you wish to alter this sequence with regard to the specifically listed courses.

Note that this sequence was prepared based on course scheduling at the time of publication and may change during your studies.

First Year**Biology 1010****Biology 1020****Chemistry 1000****Chemistry 2000**One of: **Mathematics 1560** or **Mathematics 1565**One of: **Mathematics 2560** or **Mathematics 2565**One of: **Physics 1000** or **Physics 1050****Physics 2130**

Lib Ed Requirement course

Lib Ed Requirement course

Second Year**Biochemistry 2000****Biology 2000****Biology 2300****Chemistry 2410****Chemistry 2500****Chemistry 2600****Chemistry 2740**

Lib Ed Requirement course

Lib Ed Requirement course

Lib Ed Requirement course

Third Year

Biochemistry 3100

Biochemistry 3300

Biology 3000

Biology 3210

3000/4000-level list course

3000/4000-level list course

Lib Ed Requirement course

Lib Ed Requirement course

Lib Ed Requirement course

Elective 3000/4000 level

Fourth Year

Biochemistry or Biology 4000 level

Biochemistry or Biology 4000 level

3000/4000-level list course

Elective 3000/4000 level

Elective 3000/4000 level

Elective 3000/4000 level

Elective 3000/4000 level

Elective 3000/4000 level

Elective

Elective

Note: Courses in bold in Years 1 and 2 of the sample sequence are prerequisite(s) for required courses and should be completed early in your program. Students are advised to review the prerequisites for elective courses within the major and plan accordingly.

Students are strongly advised to consult with the Department of Biological Sciences and the Department of Chemistry and Biochemistry regarding the sequencing of the above courses. In particular, students attending on a part-time basis should consult with the Coordinator of Biochemistry.