

University of
Lethbridge



Program Planning Guide

Name: _____

ID: _____

Calendar Year: 2023/2024

Major in Biochemistry:

www.ulethbridge.ca/artsci/chemistry-biochemistry

Academic Calendar:

www.ulethbridge.ca/ross/academic-calendar

High School Admission Requirements:

www.ulethbridge.ca/ross/admissions/undergrad/high-school

Current and Past Program Planning Guides:

www.ulethbridge.ca/ross/ppgs

Co-operative Education:

www.ulethbridge.ca/career-bridge/co-operative-education

Faculty of Arts and Science Advising:

www.ulethbridge.ca/artsci/advising
artsci.advising@uleth.ca
403-329-5106
M2102

Bachelor of Science
Biochemistry

This is a planning guide and not a graduation check or guarantee of course offerings. You should have a program check done in your final year of studies. Students are responsible for the accuracy of their own programs. The guide should be used in conjunction with the University of Lethbridge Calendar, which is the final authority on all questions regarding program requirements and academic regulations.

Contact an Academic Advisor (www.ulethbridge.ca/ross/academic-advising) for advising information.

Name : _____

ID : _____

Program Requirements

Completion of at least 40 courses (120.0 credit hours) with cumulative and graduation grade point averages of at least 2.00.

Major Requirements (24 courses)

- _____ Biochemistry 2000 - Introductory Biochemistry
- _____ Biochemistry 3100 - Proteins, Enzymes and Nucleic Acids
- _____ Biochemistry 3300 - Bioenergetics and Metabolism
- _____ Biology 1010 - Cellular Basis of Life
- _____ Biology 1020 - Diversity of Life
- _____ Biology 2000 - Principles of Genetics
- _____ Biology 2300 - Cell Biology
- _____ Biology 3000 - Gene Expression and Regulation
- _____ Biology 3210 - Experimental Methods in Molecular and Cellular Biology
- _____ Chemistry 1000 - General Chemistry I
- _____ Chemistry 2000 - General Chemistry II
- _____ Chemistry 2410 - Analytical Chemistry I
- _____ Chemistry 2500 - Organic Chemistry I
- _____ Chemistry 2600 - Organic Chemistry II
- _____ Chemistry 2740 - Physical Chemistry I
- _____ Physics 2000 - Introduction to Physics II

- _____ Chemistry 3410 - Analytical Chemistry II
- _____ ¹ Chemistry 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

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

One of:

- _____ Mathematics 1560 - Calculus I
- _____ Mathematics 1565 - Accelerated Calculus I

One of:

- _____ Mathematics 2560 - Calculus II
- _____ Mathematics 2565 - Accelerated Calculus II

One of:

- _____ Physics 1000 - Introduction to Physics I (recommended)
- _____ Physics 1050 - Introduction to Biophysics
- _____ ¹ Engineering 2060 - Engineering Mechanics

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

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
- _____ ¹ Biology 3420 - Animal Physiology
- _____ ¹ Biology 3460 - Plant Physiology

Other Courses (minimum 16 courses)

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____
13. _____
14. _____
15. _____
16. _____

Notes

¹ This course has a prerequisite or corequisite that is not required for the major. See the Course Catalogue (p. 351) for more information.

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.

Completion of the Liberal Education List Requirement (Lib Ed Requirement)

Only four courses (12.0 credit hours) in total may be counted from any one discipline toward the Lib Ed Requirement. Disciplines are identified by separate course subject codes.

Only four courses (12.0 credit hours) in total from the Faculty of Education (EDUC), Faculty of Health Sciences (ABHL, ADCS, HLSC, NURS, PUBH, and TREC), and the Dhillon School of Business (ACCT, AGEM, FINC, HRLR, IGBM, IMGT, MGT, and MKTG) may be counted towards the Lib Ed Requirement.

See the 2023/2024 Calendar, p. 83, for more information.

_____ Four Fine Arts and Humanities courses:

1. _____
2. _____
3. _____
4. _____

_____ Four Social Science courses:

1. _____
2. _____
3. _____
4. _____

_____ Four Science courses:

1. _____
2. _____
3. _____
4. _____

Not more than 12 courses (36.0 credit hours) may be completed at the 1000 level (or lower) [0500 - 1999] for credit towards the degree, excluding Activity courses (labelled PHAC and MUSE) and courses numbered in the range of 0520 to 0530.

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____

Completion of at least 15 courses (45.0 credit hours) from disciplines offered by the Faculty of Arts and Science, Faculty of Fine Arts, or the School of Liberal Education at the 3000/4000 level, excluding Activity courses (labelled PHAC and MUSE). Out-of-faculty courses (i.e. labelled ABHL, ACCT, ADCS, AGEM, CDEV, CRED, EDUC, FINC, HLSC, HRLR, IGBM, IMGT, MGT, MKTG, NURS, PUBH, and TREC) will not meet this requirement.

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____
13. _____
14. _____
15. _____

_____ Not more than five Independent Study courses (15.0 credit hours) may be completed for credit towards the degree.

_____ Not more than five Disciplinary Credit Applied Studies courses (15.0 credit hours) may be completed for credit towards the degree. Students may, in addition, complete Applied Studies 2000, 2001, 2010, and 2011.

_____ * Not more than 24 courses (72.0 credit hours) may be completed from any one discipline for credit towards the degree.

_____ Not more than six credit hours in Activity courses (i.e. courses labelled PHAC and MUSE) may be completed for credit towards the degree, except for Kinesiology majors (not more than 15.0 credit hours) and Music majors (not more than 12.0 credit hours).

_____ Not more than six courses (18.0 credit hours) from disciplines outside the Faculty of Arts and Science, Faculty of Fine Arts, or School of Liberal Education may be completed for credit towards the degree (i.e. labelled ABHL, ACCT, ADCS, AGEM, CDEV, CRED, EDUC, FINC, HLSC, HRLR, IGBM, IMGT, MGT, MKTG, NURS, PUBH, and TREC). Courses cross-listed between the Faculty of Arts and Science and another Faculty do not count towards this limit.

_____ Residence requirement:

Degree: a minimum of 20 courses (60.0 credit hours) must be completed at the University of Lethbridge, including at least 10 courses (30.0 credit hours) from disciplines offered by the Faculty of Arts and Science, Faculty of Fine Arts, or School of Liberal Education at the 3000/4000 level.

Major: at least half of the courses required in the major must be completed at the University of Lethbridge.

*Disciplines are identified by a specific course label (e.g. KNES, ASTR, and HIST are separate disciplines).

_____ **Minor (Optional):** _____
See the 2023/2024 Calendar, p. 331, for more information.

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____

Sample Sequencing Plan

Shown below is a sample sequence of courses for your degree. Consult timetables for course offerings, prerequisites, and corequisites before registering each term. This is just one example of how you could complete your major and degree requirements; you may find that a different sequence works as well as this one.

Year 1, Fall

Biology 1020 or Biology 1010
Chemistry 1000
Mathematics 1560 or Mathematics 1565
Physics 1000 or 1050
 Lib Ed Requirement course

Year 2, Fall

Biochemistry 2000
Chemistry 2410
Chemistry 2500
 Lib Ed Requirement course
 Lib Ed Requirement course

Year 3, Fall

Biochemistry 3300
Biology 3000
Biology 3210
 Lib Ed Requirement course
 Lib Ed Requirement course

Year 4, Fall

Biochemistry or Biology 4000 level
 3000/4000-level list course
 Elective 3000/4000 level
 Elective 3000/4000 level
 Elective

Year 1, Spring

Biology 1010 or Biology 1020
Chemistry 2000
Mathematics 2560 or Mathematics 2565
Physics 2000
 Lib Ed Requirement course

Year 2, Spring

Biology 2000
Biology 2300
Chemistry 2600
Chemistry 2740
 Lib Ed Requirement course

Year 3, Spring

Biochemistry 3100
 3000/4000-level list course
 3000/4000-level list course
 Lib Ed Requirement course
 Elective 3000/4000 level

Year 4, Spring

Biochemistry or Biology 4000 level
 Elective 3000/4000 level
 Elective 3000/4000 level
 Elective 3000/4000 level
 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.