

University of
Lethbridge



Program Planning Guide

Departments: Biological Sciences, and Chemistry and Biochemistry

Calendar Year: 2016/2017

Name: _____

ID: _____

Bachelor of Science
Biochemistry

Major in Biochemistry:

www.uleth.ca/artsci/biochemistry

Academic Calendar:

www.uleth.ca/ross/academic-calendar

High School Prerequisites by Course:

www.uleth.ca/ross/hs_prereqs/course

Current and Past Program Planning Guides:

www.uleth.ca/ross/ppgs

Faculty of Arts and Science Advising:

www.uleth.ca/artsci/advising
artsci.advising@uleth.ca
403-329-5106
SU060

Co-operative Education:

www.uleth.ca/artsci/coop

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 in the Faculty of Arts and Science for advising information.

Name : _____

ID : _____

B.Sc. Biochemistry

Completion of at least 40 courses (120.0 credit hours) with a grade point average of at least 2.00.

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 3000 - Gene Expression and Regulation
- _____ 8. Biology 3105 - Signal Transduction
- _____ 9. Biology 3210 - Experimental Methods in Molecular and Cellular Biology
- _____ 10. Biology 3400 - Principles of Microbiology
- _____ 11. Chemistry 1000 - General Chemistry I
- _____ 12. Chemistry 2000 - General Chemistry II
- _____ 13. Chemistry 2410 - Analytical Chemistry I
- _____ 14. Chemistry 2500 - Organic Chemistry I
- _____ 15. Chemistry 2600 - Organic Chemistry II
- _____ 16. Chemistry 2740 - Physical Chemistry
- _____ 17. Mathematics 1560 - Calculus I
- _____ 18. Mathematics 2560 - Calculus II
- _____ 19. Physics 2000 - Introduction to Physics II

20-21. **Two of:**

- _____ Biology 3005 - Genome Maintenance
- _____ Biology 3115 - Principles of Cell Growth
- _____ Biology 3310 - Developmental Biology
- _____ Biology 3420 - Animal Physiology
- _____ Biology 3460 - Plant Physiology
- _____ Chemistry 3410 - Analytical Chemistry II
- _____ ¹Chemistry 3730 - Advanced Physical Chemistry
- _____ Chemistry 3830 - Inorganic Chemistry I
- _____ Chemistry 3840 - Inorganic Chemistry II

22. **One of:**

- _____ Physics 1000 - Introduction to Physics I (recommended)
- _____ Physics 1050 - Introduction to Biophysics
- _____ ²Engineering 2060 - Engineering Mechanics

Two courses (6.0 credit hours) in Biochemistry or Biology (List 1 - Cellular and Molecular Biology) at the 4000 level (see the 2016/2017 Calendar, Part 7, **Biological Sciences**, p. 117, for Biology lists):

23. _____ 24. _____

Other Courses (minimum 16 courses)

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

Notes

¹Prerequisite required: *Mathematics 1410.*

²Prerequisites required: *Engineering 2000 and Mathematics 1560.*

Independent Studies courses, Applied Studies courses, and the Undergraduate Thesis may not be counted as part of the minimum requirements for the major; however, they are strongly encouraged for students taking courses beyond this minimum.

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 semesters of their fourth year. Students interested in this option should consult potential supervisors at an early stage to discuss their background preparation.

See also:

- Bachelor of Science - Biological Sciences
- Bachelor of Science - Chemistry

Completion of the General Liberal Education Requirement (GLER).

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

Only four courses (12.0 credit hours) from each of the Faculties of Education (EDUC), Health Sciences (ADCS, HLSC, PUBH, and TREC), and Management (MGT) may be counted towards the GLER.

See the 2016/2017 Calendar, p. 86, for more information.

LIST I: Fine Arts and Humanities Courses

- | | |
|----------|----------|
| 1. _____ | 3. _____ |
| 2. _____ | 4. _____ |

LIST II: Social Science Courses

- | | |
|----------|----------|
| 1. _____ | 3. _____ |
| 2. _____ | 4. _____ |

LIST III: Science Courses

- | | |
|----------|----------|
| 1. _____ | 3. _____ |
| 2. _____ | 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).

- | | |
|----------|------------------|
| 1. _____ | 7. _____ |
| 2. _____ | 8. _____ |
| 3. _____ | 9. _____ |
| 4. _____ | 10. _____ |
| 5. _____ | 11. _____ |
| 6. _____ | 12. _____ (max.) |

Completion of at least 15 courses (45.0 credit hours) from disciplines offered by the Faculty of Arts and Science or the Faculty of Fine Arts at the 3000/4000 level, excluding Activity courses (labelled PHAC and MUSE).

- | | |
|----------|------------------|
| 1. _____ | 9. _____ |
| 2. _____ | 10. _____ |
| 3. _____ | 11. _____ |
| 4. _____ | 12. _____ |
| 5. _____ | 13. _____ |
| 6. _____ | 14. _____ |
| 7. _____ | 15. _____ (min.) |
| 8. _____ | |

____ 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.

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

____ 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 four courses (12.0 credit hours) from disciplines offered outside the Faculty of Arts and Science or the Faculty of Fine Arts may be completed for credit towards the degree (i.e. labelled ADCS, CDEV, CRED, EDUC, HLSC, MGT, 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 Arts and Science courses (30.0 credit hours) at the 3000/4000 level.

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

Minor (Optional): _____
 See the 2016/2017 Calendar, p. 142, for eligible minors.

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

Sample Sequencing Plan

Shown below is a sample sequence of courses for your degree. If you follow this plan, you should be able to graduate in four years, provided you complete five courses per semester. 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
Chemistry 1000
Mathematics 1560¹
Physics 1000
GLER course

Year 1, Spring

Biology 1010
Chemistry 2000
Mathematics 2560
Physics 2000
GLER course

Year 2, Fall

Biology 2000
Chemistry 2410
Chemistry 2500
GLER course
GLER course

Year 2, Spring

Biochemistry 2000
Biology 3400
Chemistry 2600
Chemistry 2740
GLER course

Year 3, Fall

Biochemistry 3100
Biology 3000
Biology 3210
GLER course
GLER course

Year 3, Spring

Biochemistry 3300
Biology 3105
Biology or Chemistry 3000-level
list course
GLER course
Elective

Year 4, Fall

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

Year 4, Spring

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

¹ Students with less than 75% in Mathematics 30-1 or without Mathematics 31 must complete Mathematics 1010 as a prerequisite.

Note: 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.

Terms Used

GLER course: A course that could count toward the General Liberal Education Requirement. You may use courses in your major towards this 12-course requirement. See the 2016/2017 University of Lethbridge Calendar, Part 4 - Academic Regulations for complete information.

The Faculty of Arts and Science offers Liberal Education 1000 and 2000, specifically designed to introduce first-year students to the wide scope of human knowledge and teach essential university success skills, critical thinking, and integrative thinking (see the 2016/2017 University of Lethbridge Calendar, Part 14 - Courses). LBED 1000 and 2000 may be used toward satisfying the GLER.

Elective: A course that you may choose freely from all those available and applicable to your program. Use courses inside or outside your major, bearing in mind any restrictions that may apply (e.g., a maximum of 24 courses from any one discipline).

