

University of  
Lethbridge



## Program Planning Guide

Name: \_\_\_\_\_

ID: \_\_\_\_\_

Calendar Year: 2023/2024

### Major in Biological Sciences:

[www.ulethbridge.ca/artsci/biological-sciences](http://www.ulethbridge.ca/artsci/biological-sciences)

### Academic Calendar:

[www.ulethbridge.ca/ross/academic-calendar](http://www.ulethbridge.ca/ross/academic-calendar)

### High School Admission Requirements:

[www.ulethbridge.ca/ross/admissions/undergrad/high-school](http://www.ulethbridge.ca/ross/admissions/undergrad/high-school)

### Current and Past Program Planning Guides:

[www.ulethbridge.ca/ross/ppgs](http://www.ulethbridge.ca/ross/ppgs)

### Co-operative Education:

[www.ulethbridge.ca/career-bridge/co-operative-education](http://www.ulethbridge.ca/career-bridge/co-operative-education)

### Faculty of Arts and Science Advising:

[www.ulethbridge.ca/artsci/advising](http://www.ulethbridge.ca/artsci/advising)  
artsci.advising@uleth.ca  
403-329-5106  
M2102

**Bachelor of Science**  
**Biological Sciences**

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](http://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 (23 courses)**

- \_\_\_\_\_ Biochemistry 2000 - Introductory Biochemistry
- \_\_\_\_\_ Biology 1010 - Cellular Basis of Life
- \_\_\_\_\_ Biology 1020 - Diversity of Life
- \_\_\_\_\_ Biology 2000 - Principles of Genetics
- \_\_\_\_\_ Biology 2150 - Biostatistics
- \_\_\_\_\_ Biology 2200 - Principles of Ecology
- \_\_\_\_\_ Biology 2300 - Cell Biology
- \_\_\_\_\_ Biology 3300 - Evolution
- \_\_\_\_\_ Biology 4500 - Seminars in Biological Sciences
- \_\_\_\_\_ Chemistry 1000 - General Chemistry I
- \_\_\_\_\_ Chemistry 2000 - General Chemistry II
- \_\_\_\_\_ Chemistry 2500 - Organic Chemistry I

**One of:**

- \_\_\_\_\_ Mathematics 1410 - Elementary Linear Algebra
- \_\_\_\_\_ Mathematics 1560 - Calculus I
- \_\_\_\_\_ Mathematics 1565 - Accelerated Calculus I

**One of:**

- \_\_\_\_\_ Physics 1000 - Introduction to Physics I
- \_\_\_\_\_ Physics 1050 - Introduction to Biophysics (preferred)

**One of:**

- \_\_\_\_\_ One course (3.0 credit hours) in English at the 1000 level or higher
- \_\_\_\_\_ Writing 1000 - Introduction to Academic Writing

<sup>1</sup>Six courses (18.0 credit hours) in Biology at the 3000 level, including two from each of the subfield lists.

**Two of (List 1 - Cellular and Molecular Biology)**

- \_\_\_\_\_ Biochemistry 3100 - Proteins, Enzymes and Nucleic Acids
- \_\_\_\_\_ Biochemistry 3700/Neuroscience 3700 - Introduction to Bioinformatics
- \_\_\_\_\_ Biology 3000 - Gene Expression and Regulation
- \_\_\_\_\_ Biology 3005 - Genomes
- \_\_\_\_\_ Biology 3110 - Cell Signalling
- \_\_\_\_\_ Biology 3210 - Experimental Methods in Molecular and Cellular Biology
- \_\_\_\_\_ Biology 3400 - Principles of Microbiology

**Two of (List 2 - Organismal Biology)**

- \_\_\_\_\_ Biology 3310 - Developmental Biology
- \_\_\_\_\_ Biology 3420 - Animal Physiology
- \_\_\_\_\_ Biology 3460 - Plant Physiology
- \_\_\_\_\_ Biology 3520 - Invertebrate Zoology
- \_\_\_\_\_ Biology 3530 - Vertebrate Zoology
- \_\_\_\_\_ Biology 3560 - Integrative Plant Biology

**Two of (List 3 - Ecology and Evolutionary Biology)**

- \_\_\_\_\_ Biology 3095/Geography 3095 - Advanced Biogeography
- \_\_\_\_\_ Biology 3630 - Field Biology
- \_\_\_\_\_ Biology 3660 - Field Botany
- \_\_\_\_\_ Biology 3700 - Ecosystem Ecology
- \_\_\_\_\_ Biology 3710 - Population Biology
- \_\_\_\_\_ Biology 3720 - Community Ecology

\_\_\_\_\_ Two additional courses (6.0 credit hours) in Biology at the 4000 level.

1. \_\_\_\_\_
2. \_\_\_\_\_

**Notes**

<sup>1</sup> Topics courses (Biology 3850) may be assigned to one of the Biological Sciences lists at the time of scheduling. Please refer to the current term timetable.

Applied Studies, Independent Studies, 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.

**Other Courses (minimum 17 courses)**

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

**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. \_\_\_\_\_

\_\_\_\_\_ **Concentration (Optional):** \_\_\_\_\_  
See the 2023/2024 Calendar, p. 108, for more information.

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_

**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 1010 or Biology 1020**  
**Chemistry 1000**  
 English 1900 or Writing 1000  
**Mathematics Requirement**  
 Lib Ed Requirement course

**Year 2, Fall**

**Biology 2200**  
**Biology 2150**  
**Chemistry 2500**  
 Lib Ed Requirement course  
 Lib Ed Requirement course

**Year 3, Fall**

Biology 3000 level  
 Biology 3000 level  
 Biology 3000 level  
 Elective  
 Elective

**Year 4, Fall**

Biology 3000 level  
 Biology 4000 level  
 Elective 3000/4000 level  
 Elective 3000/4000 level  
 Elective

**Year 1, Spring**

**Biology 1020 or Biology 1010**  
**Chemistry 2000**  
 Physics 1050 or Physics 1000  
 Lib Ed Requirement course  
 Lib Ed Requirement course

**Year 2, Spring**

**Biochemistry 2000**  
**Biology 2000**  
**Biology 2300**  
 Lib Ed Requirement course  
 Lib Ed Requirement course

**Year 3, Spring**

Biology 3300  
 Biology 3000 level  
 Biology 3000 level  
 Elective 3000/4000 level  
 Elective

**Year 4, Spring**

Biology 4500  
 Biology 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.*