University of Lethbridge

# Program Planning Guide

**Departments:** Biological Sciences and Geography

**Calendar Year:** 2015/2016

**Name:**_____

**ID:** _____

Bachelor of Science

Environmental Science

**Major in Environmental Science:**
www.uleth.ca/artsci/environmental-science

**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 Student Program Services:**
www.uleth.ca/artsci/advising
artsci.advising@uleth.ca
(403) 329-5106
SU060

**Co-operative Education:**
www.uleth.ca/artsci/coop

**Name:** _____ **ID:** _____

## B.Sc. Environmental Science

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

## Major Requirements (25 courses)

_____ 1. Biology 1010 - Cellular Basis of Life
_____ 2. Biology 1020 - Diversity of Life
_____ 3. Biology 2000 - Principles of Genetics
_____ 4. Biology 2200 - Principles of Ecology
_____ 5. Biology 3300 - Evolution
_____ 6. Chemistry 1000 - General Chemistry I
_____ 7. Chemistry 2000 - General Chemistry II
_____ 8. Environmental Science 2000 - Fundamentals of Environmental Science
_____ 9. Environmental Science 4000 - Selected Studies in Environmental Science II (Series)
_____ 10. Geography 1000 - Introduction to Physical Geography
_____ 11. Geography 2030 - Geomorphology
_____ 12. Geography 2300 - Weather and Climate
_____ 13. Geography 2700 - Geographical Data and Analysis
_____ 14. Geography 2735 - Introduction to Geographical Information Science

_____15-17. **Three of:**

_____ Geography 2090 - Biogeography
_____ Geography 3035 - Fluvial Geomorphology
_____ Geography 3060 - Glaciology and Glacial Geomorphology
_____ Geography 3080 - Soils
_____ Geography 3300 - Microclimatology
_____ Geography 3400 - Hydrology I
_____ Geography 3720 - Remote Sensing
_____ Geography 3740 - Geographical Information Systems
_____ [1]Geography 3780 - Field Research in Geography
_____ Geography 4400 - Hydrology II
_____ Geography 4415 - Integrated Watershed Management
_____ Geography 4730 - Spatial Statistics
_____ Geography 4750 - Glacial Processes, Measurements, and Models
_____ Geology 2060 - Physical Geology

_____ 18. **One of:**

_____ Chemistry 2410 - Analytical Chemistry I
_____ Chemistry 2500 - Organic Chemistry I

_____19-20. **Two of:**

_____ Mathematics 1410 - Elementary Linear Algebra
_____ Mathematics 1560 - Calculus I
_____ Statistics 1770 - Introduction to Probability and Statistics

_____ 21. **One of:**

_____ Biology 3630 - Field Biology
_____ Geography 3710 - Field Techniques in the Earth Sciences
_____ Geography 3792 - Field Excursion in Physical Geography (Series)
_____ [2]An approved field course

Three courses (9.0 credit hours) from Biology List 2 (Organismal Biology) and List 3 (Ecology and Evolutionary Biology) of which two must be lab-based (see the **2015/2016 Calendar, Part 7, Section 16.i., p. 112,** for Biology lists). Some Topics courses in Biology may also qualify.

22. _____ 24. _____

23. _____

[3]One Independent Study or Applied Study at the 3000/4000 level in Environmental Science

25. _____

## Technical Studies Semester (5 courses)

_____ 1. Environmental Science 2000 unspecified
_____ 2. Environmental Science 2000 unspecified
_____ 3. Environmental Science 2000 unspecified
_____ 4. Environmental Science 3000 unspecified
_____ 5. Environmental Science 3000 unspecified

## Other Courses (minimum 10 courses)

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

## Notes

[1]*Prerequisite required: Geography 1200.*

[2]*Must be approved by the Coordinator of Environmental Science. An approved external field course offered by a Field Station may be counted among the final 10 courses taken for credit toward the B.Sc. degree.*

[3]*Must be approved by the Coordinator of Environmental Science.*

Students may not receive credit for courses at the University of Lethbridge for which close equivalents have been taken at Lethbridge College, and vice versa. Students must ensure that their course selection has been approved by the Coordinator of Environmental Science.

Students should consider including an introductory Physics course (Physics 1050 - Introduction to Biophysics is recommended) as an elective in their degree program. Many other courses offered by the Faculty of Arts and Science complement an Environmental Science focus. Consult the Coordinator of Environmental Science for further information.

See also:

- Bachelor of Science - Biological Sciences
- Bachelor of Science - Geography

Completion of the General Liberal Education Requirement (GLER).
*Only four courses (12.0 credit hours) in total may be counted from all courses offered by a single department. See the 2015/2016 Calendar, p. 83, 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, and PUBH). Courses cross-listed between the Faculty of Arts and Science and another Faculty do not count towards this limit.

_____ Residence requirement:

Degree: at least 20 courses (60.0 credit hours) must be completed at the University of Lethbridge, including the last 10 courses (30.0 credit hours) completed for credit towards the degree.

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

**Minor (Optional):** _____
*See the 2015/2016 Calendar, p. 137, for eligible minors.*

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

**Concentration:**
**Geographical Information Science (Optional)**
*See the 2015/2016 Calendar, p. 120, for more information.*

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

## 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*** | ***Year 1, Spring*** |
|---|---|
| Biology 1020 | Biology 1010 |
| Chemistry 1000 | Chemistry 2000 |
| Geography 1000 | Environmental Science 2000 |
| One of: Mathematics 1410, Mathematics 1560, or Statistics 1770 | Geography 2735 |
| GLER course | One of: Mathematics 1410, Mathematics 1560, or Statistics 1770 |
| ***Year 2, Fall*** | ***Year 2, Spring*** |
| Biology 2200 | Biology 2000 |
| Chemistry 2410 or Chemistry 2500 | Geography 2700 |
| Geography 2030 | Geography or Geology list course |
| Geography 2300 | GLER course |
| GLER course | GLER course |
| ***Year 3, Fall*** | ***Year 3, Spring*** |
| Biology List 2 or List 3 course (lab-based) | Technical Studies Semester[1] (15.0 credit hours) |
| Geography or Geology 3000/4000-level list course | Students will receive credit for the following (upon successful completion and receipt of transcript):<br>• 2 Environmental Science 3000-level courses<br>• 3 Environmental Science 2000-level courses |
| Field course | |
| GLER course | |
| GLER course | |
| ***Year 4, Fall*** | ***Year 4, Spring*** |
| Biology List 2 or List 3 course (lab-based) | Biology 3300 |
| Environmental Science 4000 | Biology List 2 or List 3 course |
| Geography or Geology 3000/4000-level list course | Independent Study or Applied Study 3000/4000 level |
| GLER course 3000/4000 level | GLER course 3000/4000 level |
| Elective 3000/4000 level | Elective 3000/4000 level |

[1] *If the Technical Studies Semester is undertaken in Fall, Year Three, students should follow the Fall, Year Three sequence in Spring, Year Three.*

**Note:** *Students should complete Biology 1010, Biology 1020, Biology 2000, Biology 2200, Chemistry 1000, and Chemistry 2000 by the end of Year Two to be eligible to undertake the required Technical Studies Semester in Year Three.*

## 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 2015/2016 University of Lethbridge Calendar, Part 4 - Academic Regulations (p. 83) 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 2015/2016 University of Lethbridge Calendar, Part 14 - Courses, p. 301). 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).