

University of  
Lethbridge



Faculty of Arts & Science

## Program Planning Guide

**Departments:** Biological Sciences and Geography

**Calendar Year:** 2013/2014

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

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

# Bachelor of Science Environmental Science

**Major in Environmental Science:**

[www.uleth.ca/artsci/environmental-science](http://www.uleth.ca/artsci/environmental-science)

**Faculty of Arts and Science Student Program Services:**

[www.uleth.ca/artsci/advising](http://www.uleth.ca/artsci/advising)  
[artsci.advising@uleth.ca](mailto:artsci.advising@uleth.ca)  
(403) 329-5106  
SU060

**Current and Past Program Planning Guides:**

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

**Academic Calendar:**

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

**Co-operative Education:**

[www.uleth.ca/artsci/coop](http://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. 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)**

- \_\_\_\_\_ Biology 1010 - Cellular Basis of Life
- \_\_\_\_\_ Biology 1020 - Diversity of Life
- \_\_\_\_\_ Biology 2000 - Principles of Genetics
- \_\_\_\_\_ Biology 2200 - Principles of Ecology
- \_\_\_\_\_ Biology 3300 - Evolution
- \_\_\_\_\_ Chemistry 1000 - General Chemistry I
- \_\_\_\_\_ Chemistry 2000 - General Chemistry II
- \_\_\_\_\_ Environmental Science 2000 - Fundamentals of Environmental Science
- \_\_\_\_\_ Environmental Science 4000 - Selected Studies in Environmental Science II (Series)
- \_\_\_\_\_ Geography 1000 - Introduction to Physical Geography
- \_\_\_\_\_ Geography 2030 - Geomorphology
- \_\_\_\_\_ Geography 2300 - Weather and Climate
- \_\_\_\_\_ Geography 2700 - Geographical Data and Analysis
- \_\_\_\_\_ Geography 2735 - Introduction to Geographical Information Science

- Two of:**
- \_\_\_\_\_ Mathematics 1410 - Elementary Linear Algebra
  - \_\_\_\_\_ Mathematics 1560 - Calculus I
  - \_\_\_\_\_ Statistics 1770 - Introduction to Probability and Statistics

- One of:**
- \_\_\_\_\_ Biology 3630 - Field Biology
  - \_\_\_\_\_ Geography 3710 - Field Techniques in the Earth Sciences
  - \_\_\_\_\_ Geography 3792 - Field Excursion in Physical Geography (Series)
  - \_\_\_\_\_ <sup>2</sup>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 2013/2014 Calendar, Part 7, Section 15.h., p. 116, for Biology lists). Some Topics courses in Biology may also qualify.

- 1. \_\_\_\_\_
- 2. \_\_\_\_\_
- 3. \_\_\_\_\_

**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
- \_\_\_\_\_ <sup>1</sup>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

<sup>3</sup>One Independent Study or Applied Study at the 3000/4000 level in Environmental Science

**Technical Studies Semester (5 courses)**

- \_\_\_\_\_ Environmental Science 2000 unspecified
- \_\_\_\_\_ Environmental Science 2000 unspecified
- \_\_\_\_\_ Environmental Science 2000 unspecified
- \_\_\_\_\_ Environmental Science 3000 unspecified
- \_\_\_\_\_ Environmental Science 3000 unspecified

**One of:**

- \_\_\_\_\_ Chemistry 2410 - Analytical Chemistry I
- \_\_\_\_\_ Chemistry 2500 - Organic Chemistry I

**Other Courses (minimum 10 courses)**

- 1. \_\_\_\_\_
- 2. \_\_\_\_\_
- 3. \_\_\_\_\_
- 4. \_\_\_\_\_
- 5. \_\_\_\_\_
- 6. \_\_\_\_\_
- 7. \_\_\_\_\_
- 8. \_\_\_\_\_
- 9. \_\_\_\_\_
- 10. \_\_\_\_\_

**Notes**

<sup>1</sup>Prerequisite required: Geography 1200.

<sup>2</sup>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.

<sup>3</sup>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 2013/2014 Calendar, p. 88, 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. \_\_\_\_\_

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. \_\_\_\_\_
- 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 four Activity courses (i.e. courses labelled PHAC and MUSE; maximum 6.0 credit hours) may be completed for credit towards the degree, except for Kinesiology majors (not more than 10 Activity courses; 15.0 credit hours) and Music majors (not more than 8 Activity courses; 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 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 2013/2014 Calendar, p. 143, for eligible minors.

- 1. \_\_\_\_\_ 4. \_\_\_\_\_
- 2. \_\_\_\_\_ 5. \_\_\_\_\_
- 3. \_\_\_\_\_ 6. \_\_\_\_\_

**Concentration:**  
**Geographical Information Science (Optional)**

See the 2013/2014 Calendar, p. 123, 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.

<p><b>Year 1, Fall</b>                      Biology 1020                      Chemistry 1000                      Geography 1000                      One of: Mathematics 1410,                      Mathematics 1560, or                      Statistics 1770                      GLER course</p> <p><b>Year 2, Fall</b>                      Biology 2200                      Chemistry 2410 or                      Chemistry 2500                      Geography 2030                      Geography 2300                      GLER course</p> <p><b>Year 3, Fall</b>                      Biology List 2 or List 3 course (lab-based)                      Geography or Geology 3000/                      4000-level list course                      Field course                      GLER course                      GLER course</p> <p><b>Year 4, Fall</b>                      Biology List 2 or List 3 course (lab-based)                      Environmental Science 4000<sup>2</sup>                      Geography or Geology 3000/                      4000-level list course                      GLER course 3000/4000 level                      Elective 3000/4000 level</p>	<p><b>Year 1, Spring</b>                      Biology 1010                      Chemistry 2000                      Environmental Science 2000                      Geography 2735                      One of: Mathematics 1410,                      Mathematics 1560, or                      Statistics 1770</p> <p><b>Year 2, Spring</b>                      Biology 2000                      Geography 2700                      Geography or Geology list course                      GLER course                      GLER course</p> <p><b>Year 3, Spring</b>                      Technical Studies Semester<sup>1</sup>(15.0 credit hours)                      Students will receive credit for the following (upon successful completion and receipt of transcript):                      • 2 Environmental Science 3000-level courses                      • 3 Environmental Science 2000-level courses</p> <p><b>Year 4, Spring</b>                      Biology 3300                      Biology List 2 or List 3 course                      Independent Study or Applied Study 3000/4000 level                      GLER course 3000/4000 level                      Elective 3000/4000 level</p>
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<sup>1</sup> If the Technical Studies Semester is undertaken in Fall, Year Three, students should follow the Fall, Year Three sequence in Spring, Year Three.

<sup>2</sup> Semester of offering may vary.

**Note:** Students must 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. Since spaces are limited, students lacking this necessary background may be deemed ineligible for the assigned Technical Studies Semester and required to change to another major.

## 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 2013/2014 University of Lethbridge Calendar, Part 4 - Academic Regulations (p. 88) 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 2013/2014 University of Lethbridge Calendar, Part 14 - Courses, p. 307). 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).

