



## Program Planning Guide

Current and past Program Planning Guides are available on the UofL website at [www.uleth.ca/ross/ppgs/ppg.html](http://www.uleth.ca/ross/ppgs/ppg.html)

Calendar Year: 2012/2013

Faculty: Arts & Science

### About the Department of Geography

The Department of Geography pursues excellence in teaching and research in the closely related areas of Geography, Geology, Archaeology, and Urban and Regional Studies, all of which deal with the human and natural environment, and spatial analysis. The Department of Geography also administers the multidisciplinary majors in Archaeology and Geography (B.A. and B.Sc.) and in Urban and Regional Studies (B.A.), and, with the Department of Mathematics and Computer Science, the multidisciplinary major in Computer Science and Geographical Information Science (B.Sc.).

### About the Geography Major

The Department offers instruction leading to a Bachelor of Arts (B.A.) or a Bachelor of Science (B.Sc.) degree with a major in Geography. Students may also choose Geography as one of their majors for a BASc. degree. The Department also offers M.A., M.Sc., and Ph.D. degree programs in Geography and Archaeology.

### Core Geography Courses

Building on its disciplinary strengths, the Department offers a set of core courses which are an essential introduction to the breadth of the discipline, and presents a variety of more advanced courses which represent the expertise of the faculty. Courses in Physical Geography and those involving geographical techniques are Science courses, while those in Human Geography are Social Science courses.

### Archaeology 1000

Archaeology 1000, an introductory course required of all Geography majors, opens to more advanced courses falling within the two main themes of Old-World and New-World archaeology.

### Geography Courses for Non-Majors

While the curriculum is geared mainly to Geography major programs, the Department is also committed to enhancing the study of Geography, Geology and Archaeology throughout the University, and to providing courses which fulfill the General Liberal Education Requirement. The introductory courses (Geography 1000, Geography 1200, Geography 2535, Archaeology 1000) are open to all students of the University, and two service courses are offered, without prerequisites, for students in other programs where a knowledge of world regional geography (Geography 2000) or the geography of Canada (Geography 2600) is required.

### Concentration in Geographical Information Science

Geography majors in the B.A., B.Sc., and BASc. degree programs may declare a Concentration in Geographical Information Science (GIS). The GIS Concentration is also available to applicants choosing a major in Agricultural Studies (B.Sc. or Post-Diploma B.Sc. only), Archaeology and Geography, Environmental Science (B.Sc. only), or Urban and Regional Studies.

### Career Opportunities

Professional occupations in Geographical Information Science are growing rapidly in Canada and around the world. There is an ever-increasing demand for skilled professionals with an advanced level of GIS education. Our Geographical Information Science program is designed to provide both the specialized problem-solving skills and broad spatial modelling background that are required for decision support in fields as diverse as environmental management, urban planning, infrastructure design and marketing. Geography majors graduating from the University of Lethbridge with a Concentration in Geographical Information Science have career possibilities in a number of exciting and dynamic occupations that specialize in marketing, environmental science, civil engineering consulting, forestry management or energy transmission, to name only a few. As a University of Lethbridge student you will have access to advanced technologies and research expertise, and gain practical skills using state-of-the-art software.

# Geography Bachelor of Science

**High School Courses**

Several university-level science courses have high school-level courses as recommended background or prerequisites. Students are advised to complete recommended background courses before registering in the university-level course; students must have successfully completed prerequisites before they may register in the university-level course. Students pursuing a Geography major should note the following recommended/required high school courses.

<i>UofL Science course</i>		<i>High School course</i>
Biochemistry	2300	Chemistry 30**
Biology	1010	Biology 30 and Chemistry 30**
	2000	Mathematics 30-1 or Pure Mathematics 30* (and Biology 1010 and Biology 1020)
	2200	Mathematics 30-1 or Pure Mathematics 30* (and Biology 1010 and Biology 1020)
Chemistry	1000	Chemistry 30** and Mathematics 30-1 or Pure Mathematics 30*
		<i>Recommended: Mathematics 31 and Physics 30</i>
	2320	Chemistry 30**
Computer Science	1620	Mathematics 30-1, Mathematics 30-2, or Pure Mathematics 30*
Mathematics	1410	Mathematics 30-1 or Pure Mathematics 30*
	1560	Mathematics 30-1 or Pure Mathematics 30*
		<i>Recommended: Mathematics 31 and a blended grade of at least 75% in Mathematics 30-1 or Pure Mathematics 30*</i>
Physics	1000	Physics 30, and Mathematics 30-1 or Pure Mathematics 30*
		<i>Corequisite: Mathematics 1560</i>
	2130	One of Physics 30 or Physics 1050 and Mathematics 30-1 or Pure Mathematics 30*
		<i>Corequisite: Mathematics 1560</i>
Statistics	1770	Mathematics 30-1, Mathematics 30-2, or Pure Mathematics 30*

\* Instead of Mathematics 30-1, Mathematics 30-2, or Pure Mathematics 30, students may use UofL's Mathematics 0500.

\*\* Instead of Chemistry 30, students may use UofL's Chemistry 0500.

**Co-operative Education**

A Co-op option, requiring three work terms, is available. Students interested in the Co-operative Education/ Internship program should contact the Coordinator of Co-operative Education in the Career Resources Centre (AH154 | phone: 403-382-7154) for further information.

**Program Requirements**

The B.Sc. degree with a major in Geography requires 40 semester courses, including a minimum of 23 courses (17 core plus six cognates) in the major. A maximum of 20 courses in Geography (including Geology) is allowed. The Department of Geography offers courses in Geography, Geology and Archaeology. For the B.Sc., you will emphasize Geography courses that are on the Science list (see List III: Science Courses, p. 93, in the 2012/2013 Calendar). Geography majors in the B.Sc. program may declare a Concentration in Geographical Information Science (please see page 4 of this program guide for details).

**Transfer Credit**

Remember that you may use both University of Lethbridge credit and credit transferred from another college or university to meet degree and major requirements. Transfer credit may be either specified or unspecified. Specified credit is indicated on your transcript by the subject name and the specific number of the course, e.g., Geography 1000, 2210, etc. Unspecified credit (1XXX, 2XXX, etc.) is indicated by the subject name and level of the course in parentheses, e.g., Geography (1000 level), Geography (2000 level), etc.

**Unspecified Course Credit**

Unspecified course credit means that the University of Lethbridge does not offer the same course you transferred in, but we recognize it and treat it as a regular course. An unspecified course would count as one of your maximum of 20 from one department, but it could not meet a specific course requirement. For example, if Geography 2700 is required in your program, you could not use Geography (2000 level) to fulfill that requirement. Students with unspecified transfer credit need to consult an Academic Advisor to establish how the transfer credit fits in the degree program. This should be done as soon as possible after transfer credit is awarded.

**Program Worksheet**

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

**Required courses:**

- \_\_\_\_\_ 1. Geography 1000 - Introduction to Physical Geography
- \_\_\_\_\_ 2. Geography 1200 - Introduction to Human Geography
- \_\_\_\_\_ 3. Geography 2030 - Geomorphology
- \_\_\_\_\_ 4. Geography 2210 - Spatial Organization of Economic Activity
- \_\_\_\_\_ 5. Geography 2300 - Weather and Climate
- \_\_\_\_\_ 6. Geography 2700 - Geographical Data and Analysis
- \_\_\_\_\_ 7. Geography 2735 - Introduction to Geographical Information Science
- \_\_\_\_\_ 8. ONE of the following Field Courses:
  - \_\_\_\_\_ Archaeology 3300 - Archaeological Field Work (Series)
  - \_\_\_\_\_ Geography 3710 - Field Techniques in the Earth Sciences
  - \_\_\_\_\_ Geography 3780 - Field School
  - \_\_\_\_\_ Geography 4710 - Remote Sensing Field Techniques
- \_\_\_\_\_ 9-10. TWO of the following Geographical Techniques Courses:
  - \_\_\_\_\_ Geography 3235 - Quantitative Models for Geographic Analysis
  - \_\_\_\_\_ Geography 3700 - Cartography
  - \_\_\_\_\_ Geography 3720 - Remote Sensing
  - \_\_\_\_\_ Geography 3740 - Geographical Information Systems
  - \_\_\_\_\_ Geography 3750 - GIS Applications in Human Geography
  - \_\_\_\_\_ Geography 4730 - Spatial Statistics
- \_\_\_\_\_ 11-13. THREE of the following Physical Geography Courses:
  - \_\_\_\_\_ Geography 2090 - Biogeography
  - \_\_\_\_\_ Geography 3035 - Fluvial Geomorphology
  - \_\_\_\_\_ Geography 3060 - Glaciology and Glacial Geomorphology
  - \_\_\_\_\_ Geography 3075 - Environmental Resources Management
  - \_\_\_\_\_ Geography 3080 - Soils
  - \_\_\_\_\_ Geography 3300 - Microclimatology
  - \_\_\_\_\_ Geography 3400 - Hydrology I
  - \_\_\_\_\_ Geology 2060 - Physical Geology
- \_\_\_\_\_ 14-16. THREE of:
  - \_\_\_\_\_ Geography 4060 - Agricultural Soil Management
  - \_\_\_\_\_ Geography 4065 - Irrigation Science
  - \_\_\_\_\_ Geography 4400 - Hydrology II
  - \_\_\_\_\_ Geography 4415 - Integrated Watershed Management
  - \_\_\_\_\_ Geography 4700 - Advanced Computer Mapping
  - \_\_\_\_\_ Geography 4725 - Advanced Remote Sensing
  - \_\_\_\_\_ Geography 4740 - Advanced Geographical Information Systems
  - \_\_\_\_\_ Geography 4750 - Glacial Processes, Measurements, and Models
- \_\_\_\_\_ 17. ONE of:
  - \_\_\_\_\_ Geography 4030 - Series in Advanced Physical Geography
  - \_\_\_\_\_ Geography 4751 - Seminar in Spatial Modelling
  - \_\_\_\_\_ Geography 4752 - Seminar in Geographical Information Systems
  - \_\_\_\_\_ Geography 4753 - Seminar in Remote Sensing
  - \_\_\_\_\_ Geography 4900 - History and Theory of Geography

**Required cognates:**

- \_\_\_\_\_ 18. Archaeology 1000 - Introduction to Archaeology
- \_\_\_\_\_ 19. Biology 1020 - Diversity of Life
- \_\_\_\_\_ 20. Environmental Science 2000 - Fundamentals of Environmental Science
- \_\_\_\_\_ 21. ONE of:
  - \_\_\_\_\_ Chemistry 1000 - General Chemistry I
  - \_\_\_\_\_ Physics 1000 - Introduction to Physics I
- \_\_\_\_\_ 22. ONE of:
  - \_\_\_\_\_ Mathematics 1410 - Elementary Linear Algebra
  - \_\_\_\_\_ Mathematics 1560 - Calculus I
  - \_\_\_\_\_ Statistics 1770 - Introduction to Probability and Statistics
- \_\_\_\_\_ 23. One additional course (2000 level or higher) from the offerings in Astronomy, Biochemistry, Biology, Chemistry, Computer Science, Engineering, Mathematics, Statistics, or Physics

**Optional Concentration**

**Concentration: Geographical Information Science**

Geography majors in the B.Sc. degree program may declare a Concentration in Geographical Information Science.

**Required courses:**

- \_\_\_\_\_ 1. One additional course from the list in requirements 9-10, above (geographical techniques)
- \_\_\_\_\_ 2-4. THREE of:
  - \_\_\_\_\_ Geography 4400 - Hydrology II OR Geography 4415 - Integrated Watershed Management OR Geography 4750 - Glacial Processes, Measurements, and Models
  - \_\_\_\_\_ Geography 4700 - Advanced Computer Mapping
  - \_\_\_\_\_ Geography 4710 - Remote Sensing Field Techniques
  - \_\_\_\_\_ Geography 4725 - Advanced Remote Sensing
  - \_\_\_\_\_ Geography 4740 - Advanced Geographical Information Systems
  - \_\_\_\_\_ Geography 4751 - Seminar in Spatial Modelling
  - \_\_\_\_\_ Geography 4752 - Seminar in Geographical Information Systems
  - \_\_\_\_\_ Geography 4753 - Seminar in Remote Sensing

**Required Cognate:**

- \_\_\_\_\_ 5. Computer Science 1620 - Fundamentals of Programming I

**Note:** Students choosing to complete the Geographical Information Science Concentration in addition to the major in Geography for the B.Sc. may exceed the maximum departmental limit (i.e. 20 Geography courses) and may need to complete more than the minimum 40 courses for the B.Sc.

Students may not double count Geography courses required for the Concentration in Geographical Information Science in fulfilling requirements for the major in Geography.

For students who complete all requirements, the Concentration in Geographical Information Science will be acknowledged on the official transcript.

**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>                      Geography 1000                      Chemistry 1000 or Physics 1000  <i>(required cognate)</i>                      Mathematics or Statistics cognate                      GLER course                      GLER course</p>	<p><b>Year 1, Spring</b>                      Archaeology 1000 <i>(required cognate)</i>                      Geography 1200                      Biology 1020 <i>(required cognate)</i>                      GLER course                      GLER course</p>
<p><b>Year 2, Fall</b>                      Environmental Science 2000  <i>(required cognate)</i>                      Geography 2030                      Geography 2210                      GLER course                      Science elective</p>	<p><b>Year 2, Spring</b>                      Geography 2300                      Geography 2700                      Geography 2735                      Additional science cognate<sup>1</sup>                      GLER course</p>
<p><b>Year 3, Fall</b>                      Geographical Techniques course                      Physical Geography course                      Geography - Field course<sup>2</sup>                      Elective                      Elective</p>	<p><b>Year 3, Spring</b>                      Geographical Techniques course                      Physical Geography course                      Geography 4000-level list course                      Science elective                      Elective</p>
<p><b>Year 4, Fall</b>                      Physical Geography course                      Geography 4000-level list course                      Elective 3000/4000 level                      Science elective                      Elective</p>	<p><b>Year 4, Spring</b>                      Geography 4000-level list course                      Geography 4000-level list course                      Elective 3000/4000 level                      Science elective                      Elective</p>

<sup>1</sup> Additional science cognate (2000 level or higher) must be chosen from offerings in Astronomy, Biochemistry, Biology, Chemistry, Computer Science, Engineering, Mathematics, Statistics, or Physics.

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

**Note:** Additional requirements for the Concentration in Geographical Information Science should be taken in place of 'Electives' in Years 3 and 4 as appropriate.

Students considering entry to a graduate program in Geography are advised to complete Geography 4900. They should also complete a 4000-level Independent Study course in Geography in their final year.

**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 2012/2013 University of Lethbridge Calendar, Part 4 - Academic Regulations (p. 91) 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 2012/2013 University of Lethbridge Calendar, Part 14 - Courses, p. 320). 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 20 courses from any one department).

**Cognate:** A course from a related discipline deemed to complement the chosen area of study and to encompass knowledge and skills essential to that area.

