



## 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: 2010/2011

Faculty: Arts & Science/Education

### Department of Biological Sciences

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#### About the Department of Biological Sciences

The Department of Biological Sciences offers a major in Biological Sciences with possible emphasis on one of three general fields: Cellular and Molecular Biology, Organismal Biology, and Ecology and Evolution, and supports courses for a number of pre-professional transfer programs. With other Departments, the Department of Biological Sciences jointly offers instruction leading to multidisciplinary majors in Agricultural Biotechnology, Agricultural Studies, Biochemistry and Environmental Science and Post-Diploma programs with majors in Agricultural Studies and Environmental Science.

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#### Biological Sciences Majors Emphasizing Cell and Molecular Biology or Ecology

Students interested in emphasizing cell and molecular biology or ecology should consult with the Department of Biological Sciences regarding course sequencing and selection.

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#### Research Opportunities

Many opportunities exist for interaction with Faculty members in their research programs through Independent Study and Summer work. All such interactions provide valuable experience and insights into the various fields of biological research. You are encouraged to seek out these opportunities, especially if you are interested in pursuing graduate studies.

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#### Contact the Department Chair

If you plan to major in Biological Sciences, come and talk about your plans with a Faculty member. You should see the Department Chair, who will assign you to a Faculty member for advising. You should consult an Arts and Science Advisor (Student Program Services Office, SU060) or an Education Advisor (Student Program Services Office, TH421) concerning degree requirements for courses outside Biological Sciences.

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#### Co-operative Education in the Sciences

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 (B610 | phone: 403-382-7154) for further information.

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### Faculty of Education

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#### Choosing an Education Major

The Faculty of Education offers 11 different majors that correspond to teaching subjects in Alberta schools (see p. 163 in the 2010/2011 University of Lethbridge Calendar for a listing). In highly competitive teaching majors, the GPA for admission may be above the minimum requirements.

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#### How to Choose a Major

Students generally begin by thinking about which subjects they enjoyed and did well at in school. Students are also encouraged to conduct additional research regarding their interests and aptitudes. Students who are uncertain about their major should try taking introductory courses in several areas.

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#### Choosing Courses Outside the Major

Students sometimes find that their initial objective to teach only at the elementary level or only at the secondary school level is later modified—or even completely changed. Students are therefore encouraged to select courses that will prepare them for teaching in a variety of situations. Moreover, students should select courses that not only provide breadth and richness for the classroom but also provide the basis for the development of a teaching minor or specialization.

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 or Faculty of Education for advising information.

**Choosing an Education Minor**

The Faculty of Education offers 19 minors (see p. 167 in the 2010/2011 University of Lethbridge Calendar for a listing). A minor consists of five non-Education courses (excluding those used in the major) and one curriculum and instruction Education course. Students may use the same courses to fulfill the minor and the General Liberal Education Requirement (GLER).

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**Choosing an Education Specialization**

The Faculty of Education offers three specializations:

- Early Childhood Education
- Special/Inclusive Education
- Technology in Education

The specializations consist of four courses and corresponding Professional Semester III focus.

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**Advantages of Completing a Minor and/or Specialization**

Completing a minor and/or a specialization allows students to develop expertise in a second area of teaching and be more versatile and marketable as a graduating teacher. For more information, see the 2010/2011 University of Lethbridge Calendar, Part 8 - Education, Sections 7. Education Minors (p. 167) and 8. Education Specializations (p. 172).

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**Where to Get Help**

You can start career research at your school counselling centre, at your local library, or on the Internet, including websites like Alberta Advanced Education and Technology ([www.advancededucation.gov.ab.ca](http://www.advancededucation.gov.ab.ca)). There are also many programs and people at the University of Lethbridge to assist you with a choice of major. Career and Employment Services (CES) assists students and alumni with their career exploration needs (in particular, see "What Can I Do With a Major in...?" at [www.uleth.ca/ross/ces/majors.html](http://www.uleth.ca/ross/ces/majors.html)). Students may also contact an Academic Advisor in Student Program Services in the Faculty of Education (email: [edu.sps@uleth.ca](mailto:edu.sps@uleth.ca) | phone: 403-329-2254) or in the Faculty of Arts and Science (email: [artsci.advising@uleth.ca](mailto:artsci.advising@uleth.ca) | phone: 403-329-5106).

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**Program Requirements**

The B.Sc./B.Ed. combined degrees program with a major in Biological Sciences/Science Education requires a minimum of 50 courses, including 30 in Arts and Science and 20 in Education. A minimum of 16 courses (10 courses in Biological Sciences plus 6 cognates) is required in the Biological Sciences major. A maximum of 17 courses in Biological Sciences (including courses labelled Botany and Zoology prior to 1999/2000) is allowed.

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**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., Biology 1010, Biology 3300, etc. Unspecified credit (1XXX, 3XXX, etc.) is indicated by the subject name and level of the course in parentheses, e.g., Biology (1000 level), Biology (3000 level), etc.

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**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 17 from one department, but it could not meet a specific course requirement. For example, if Biology 2000 is required in your program, you could not use Biology (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.

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**Program Worksheet**

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

**Required Biological Sciences 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
- \_\_\_\_\_ 6-10. FIVE courses. TWO courses (6.0 credit hours) from two Lists (Cellular and Molecular Biology, Organismal Biology, or Ecology and Evolutionary Biology), plus a minimum of ONE course from the third list. ONE must be at the 4000 level.

List 1: Cellular and Molecular Biology (BIOL 3000, 3005, 3105, 3115, 3210, 4100, 4110, 4130, 4140, 4170, 4200, 4230)

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List 2: Organismal Biology (BIOL 3310, 3400, 3420, 3460, 3505, 3520, 3530, 3560, 4420, 4440, 4560)

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List 3: Ecology and Evolutionary Biology (BIOL 3605, 3610\*, 3630, 3700, 3800, 4700, 4800)

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*\*Prerequisite required: Environmental Science 2000.*

Of the five courses completed for requirements 6-10 above, one must be at the 4000 level:

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**Required Cognates:**

- \_\_\_\_\_ 11. Biochemistry 2000 - Introductory Biochemistry
- \_\_\_\_\_ 12. Chemistry 1000 - General Chemistry I
- \_\_\_\_\_ 13. Chemistry 2000 - General Chemistry II
- \_\_\_\_\_ 14. Chemistry 2500 - Organic Chemistry I
- \_\_\_\_\_ 15. ONE of:
  - \_\_\_\_\_ Mathematics 1410 - Elementary Linear Algebra
  - \_\_\_\_\_ Mathematics 1560 - Calculus I
- \_\_\_\_\_ 16. ONE of:
  - \_\_\_\_\_ Physics 1000 - Introduction to Physics I
  - \_\_\_\_\_ Physics 1050 - Introduction to Biophysics (preferred)

**Recommended Course:**

\_\_\_\_\_ Environmental Science 2000 - Fundamentals of Environmental Science

**Note:** Only one of Biology 1010 and Biology 1020 will be counted towards the limit of eight introductory courses for the B.Sc. portion of the B.Sc./B.Ed. program.

If you have questions regarding the Combined Degrees Biological Sciences/Science Education major, you should contact one of the Department Advisors.

## 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 five 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 1010                      Chemistry 1000 (required cognate)                      Mathematics 1410 or                      Mathematics 1560 (required cognate)                      Physics 1050 (preferred required cognate)                      GLER course</p> <p><b>Year 2, Fall</b>                      Biology 2000                      Biology 2200                      Chemistry 2500 (required cognate)                      Education 2500<sup>1</sup>                      GLER course</p> <p><b>Year 3, Fall</b>                      Professional Semester I</p> <p><b>Year 4, Fall</b>                      Biology 3000/4000 level                      Biology 3000/4000 level                      Elective 3000/4000 level                      Science elective                      Science elective</p> <p><b>Year 5, Fall</b>                      Professional Semester III</p>	<p><b>Year 1, Spring</b>                      Biology 1020                      Chemistry 2000 (required cognate)                      Environmental Science 2000 (recommended)                      GLER course                      GLER course</p> <p><b>Year 2, Spring</b>                      Biochemistry 2000 (required cognate)                      Biology 3300                      GLER course                      GLER course                      GLER course</p> <p><b>Year 3, Spring</b>                      Biology 3000/4000 level                      Biology 3000/4000 level                      Science elective 3000/4000 level                      Elective 3000/4000 level                      GLER course</p> <p><b>Year 4, Spring</b>                      Professional Semester II</p> <p><b>Year 5, Spring</b>                      Biology 4000-level                      Education Foundation course                      Education elective                      Education elective                      Education elective</p>
<p>Elementary Education and Special/Inclusive Education students will reverse the Fall and Spring semesters in Year 5 and complete PS III in the Spring.</p>	

<sup>1</sup> Education 2500 may also be taken in Spring or Summer semester.

**Note:** 3000- and 4000-level Biology courses are not typically offered every semester. Please use the following guidelines when planning your schedule:

Courses typically offered in the Fall Semester  
 Biology 3005, 3210, 3420, 3505, 3605, 3700, 4110, 4130, 4200, 4560, 4700

Courses typically offered in the Spring Semester  
 Biology 3115, 3310, 3400, 3460, 3800, 4100, 4170, 4230

Courses typically offered in alternate years  
 Biology 3520, 3530, 3560, 3610, 3630, 4140, 4420, 4440, 4800

### 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 2010/2011 University of Lethbridge Calendar, Part 4 - Academic Regulations (p. 85) 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 2010/2011 University of Lethbridge Calendar, Part 14 - Courses, p. 306). 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 17 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.

