



## 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 Multidisciplinary Major in Agricultural Studies for the B.Sc.

The multidisciplinary major in Agricultural Studies for the B.Sc. includes courses in Agricultural Studies, Biological Sciences, and Geography.

### Alberta Institute of Agrologists (AIA)

A student who successfully completes this degree program and major may apply to the Alberta Institute of Agrologists (AIA) to be registered as a Professional Agrologist within Alberta. Students should contact the Coordinator of Agricultural Studies early in the program for further information.

### Where to Go for More Information

Students should contact the Coordinator of Agricultural Studies and the Student Program Services Office (SU060 | phone: 403-329-5106) for further information.

### 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.

### 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 an Agricultural Studies major should note the following recommended/required high school courses.

<i>UofL Science course</i>		<i>High School course</i>
Biology	1010	Biology 30 and Chemistry 30**
	1020	<i>Recommended: Biology 30</i>
	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	1110	<i>Recommended: Chemistry 30** and Mathematics 30-1 or Pure Mathematics 30*</i>
Computer Science	1620	Mathematics 30-1, Mathematics 30-2, or Pure Mathematics 30*
Mathematics	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	1050	Mathematics 30-1 or Pure Mathematics 30*
		<i>Recommended: One course in the physical sciences at the 20 level or above</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.

### Program Requirements

The B.Sc. degree with a multidisciplinary major in Agricultural Studies requires 40 semester courses, including 20 courses in the major. Students in this program must complete, in addition to the 20-course major, a Technical Studies Semester of practical agricultural training (equivalent of five courses, 15.0 credit hours) at an approved college.

### 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, 2000, etc. Unspecified credit (1XXX, 2XXX, etc.) is indicated by the subject name and level of the course in parentheses, e.g., Biology (1000 level), Biology (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 Biology 1020 is required in your program, you could not use Biology (1000 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.

**Required Courses** Students must complete a total of 20 courses for the major: a core of 12 courses plus eight courses from the subfields, as indicated below.

**Program Worksheet**

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

**Required core (12 courses):**

- |   |   |
|---|---|
| _____ 1. Agricultural Studies 1000 - The Evolution of Agriculture               | _____ Biology 3610 - Prairie Conservation                                 |
| _____ 2. Agricultural Studies 3300 - Modelling of Agricultural Systems          | _____ Biology 3700 - Ecosystem and Community Ecology                      |
| _____ 3. Agricultural Studies 4000 - Seminar in Agricultural Issues             | _____ Biology 4100 - Advances in Agricultural Biotechnology               |
| _____ 4. Agricultural Studies 4300 - Advanced Modelling of Agricultural Systems | _____ Biology 4110 - Advances in Genetics, Molecular and Cellular Biology |
| _____ 5. Biology 1010 - Cellular Basis of Life                                  | _____ <b>**</b> Biology 4170 - Plant Biotechnology                        |
| _____ 6. Biology 1020 - Diversity of Life                                       | _____ Biology 4560 - Plant Development                                    |
| _____ 7. Biology 2000 - Principles of Genetics                                  | _____ Chemistry 2120 - Chemistry for Life Sciences II                     |
| _____ 8. Chemistry 1110 - Chemistry for Life Sciences I                         | _____ Environmental Science 2000 - Fundamentals of Environmental Science  |
| _____ 9. Economics 1010 - Introduction to Microeconomics                        |   |
| _____ 10. Geography 1000 - Introduction to Physical Geography                   | <i>*Prerequisite required: Biochemistry 2000.</i>                         |
| _____ 11. Statistics 1770 - Introduction to Probability and Statistics          | <i>**Prerequisite required: Biology 3210.</i>                             |
| _____ 12. One of:   |   |
| _____ Computer Science 1620 - Fundamentals of Programming I                     |   |
| _____ Mathematics 1560 - Calculus I   |   |
| _____ Physics 1050 - Introduction to Biophysics                                 |   |

**B. Geography Subfield**

- \_\_\_\_\_ Environmental Science 2000 - Fundamentals of Environmental Science
- \_\_\_\_\_ Geography 2030 - Geomorphology
- \_\_\_\_\_ Geography 2300 - Weather and Climate
- \_\_\_\_\_ Geography 2700 - Geographical Data and Analysis
- \_\_\_\_\_ Geography 2735 - Introduction to Geographical Information Science
- \_\_\_\_\_ Geography 3075 - Environmental Resources Management
- \_\_\_\_\_ Geography 3080 - Soils
- \_\_\_\_\_ Geography 3210 - Agricultural Geography
- \_\_\_\_\_ Geography 3400 - Hydrology I
- \_\_\_\_\_ Geography 3700 - Cartography
- \_\_\_\_\_ Geography 3720 - Remote Sensing
- \_\_\_\_\_ Geography 3740 - Geographical Information Systems
- \_\_\_\_\_ Geography 4060 - Agricultural Soil Management
- \_\_\_\_\_ Geography 4065 - Irrigation Science
- \_\_\_\_\_ Geography 4200 - Project in Agricultural Geography
- \_\_\_\_\_ Geography 4400 - Hydrology II
- \_\_\_\_\_ Geography 4415 - Integrated Watershed Management
- \_\_\_\_\_ Geography 4725 - Advanced Remote Sensing
- \_\_\_\_\_ Geography 4740 - Advanced Geographical Information Systems
- \_\_\_\_\_ Geology 2060 - Physical Geology

**Required subfield courses:**

The remaining eight courses must include:

- \_\_\_\_\_ 1. At least six courses from one of the following subfields (Biological Sciences or Geography).
- \_\_\_\_\_ 2. At least two courses from the other subfield.
- \_\_\_\_\_ 3. At least four courses must be at the 3000/4000 level:
  - 1. \_\_\_\_\_
  - 2. \_\_\_\_\_
  - 3. \_\_\_\_\_
  - 4. \_\_\_\_\_

**A. Biological Sciences Subfield**

- \_\_\_\_\_ Biology 2200 - Principles of Ecology
- \_\_\_\_\_ Biology 3000 - Gene Expression and Regulation
- \_\_\_\_\_ Biology 3105 - Signal Transduction
- \_\_\_\_\_ **\*** Biology 3310 - Developmental Biology
- \_\_\_\_\_ Biology 3400 - Principles of Microbiology
- \_\_\_\_\_ Biology 3420 - Animal Physiology
- \_\_\_\_\_ Biology 3460 - Plant Physiology
- \_\_\_\_\_ Biology 3505 - Freshwater Biology
- \_\_\_\_\_ Biology 3520 - Invertebrate Zoology
- \_\_\_\_\_ Biology 3530 - Vertebrate Zoology
- \_\_\_\_\_ Biology 3560 - Integrative Plant Biology

**Note:** Students wishing to pursue the Concentration in Geographical Information Science must complete Geography 2735, Geography 3720, and Geography 3740 among the eight courses required in the Geography subfield.

**Note:** Applied Studies, Independent Studies and Special Topics courses may be used to fulfill requirements in the Biological Sciences subfield or the Geography subfield provided:

- 1. They are clearly related to the subfield; and,
- 2. They are approved by the Coordinator of Agricultural Studies.

**Note:** Students should refer to the current Calendar to ensure they have completed the prerequisites for the above courses.

**Additional Information and Requirements**

Students may not receive credit for courses at the University of Lethbridge for which close equivalents have been taken at an approved college. Students must ensure that their course selection has been approved by the Coordinator of Agricultural Studies.

Students desiring recognition in professional societies are advised to include an ethics course in their electives (such as Philosophy 3402 - Biomedical Ethics).

**Technical Studies Semester**

Students are required to complete a semester of study at an approved college. The Technical Studies Semester counts as the equivalent of 15.0 credit hours at the University of Lethbridge (i.e., three unspecified 2000-level and two unspecified 3000-level Agricultural Studies courses).

The Technical Studies Semester should be taken after at least 20 university courses have been completed and prior to registration in the final 10 courses for the degree.

Students must have the college course selection approved by the Coordinator of Agricultural Studies. Further details are available from the Coordinator.

**Note:** *The 15.0 credit hours of the Technical Studies Semester will count as science for the Divisional Course Designation requirement.*

**Optional Concentrations**

**Concentration: Agricultural Business**

Agricultural Studies majors in the B.Sc. degree program may declare a Concentration in Agricultural Business.

Students must complete a minimum of FIVE courses for the Concentration in Agricultural Business.

**Required courses:**

- \_\_\_\_\_ Management 2020 - Marketing
- \_\_\_\_\_ Management 2100 - Introductory Accounting
- \_\_\_\_\_ Three of:
  - \_\_\_\_\_ Economics 3030 - Managerial Economics
  - \_\_\_\_\_ Economics 3080/Management 3780 - Principles of Industrial Organization I
  - \_\_\_\_\_ Management 3010 - Management Law
  - \_\_\_\_\_ Political Science 2210 - Canadian Politics and Government
  - \_\_\_\_\_ \*Political Science 3420/Management 3050 - Human Resource Management

*\*Has prerequisites: One of Management 2030 or one 2000-level Political Science course (3.0 credit hours), and one of Writing 1000 or a university English course (3.0 credit hours).*

For students who complete all requirements, the Concentration in Agricultural Business will be acknowledged on the official transcript.

**Concentration: Geographical Information Science**

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

**Required courses:**

- \_\_\_\_\_ Four of:
  - \_\_\_\_\_ \*Geography 3700 - Cartography OR Geography 4730 - Spatial Statistics
  - \_\_\_\_\_ \*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:**

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

*\*Students may not double count courses required for the Concentration in Geographical Information Science in fulfilling requirements for the Geography subfield. In such cases, students must select another option from the subfield list.*

For students who complete all the 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.

### 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. 90) 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. 327). 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).

### With Biological Sciences as the Six-Course Subfield

#### Year 1, Fall

Agricultural Studies 1000  
Biology 1010  
Economics 1010  
Geography 1000  
One of: Computer Science 1620,  
Mathematics 1560, Physics 1050

#### Year 2, Fall

Biology 2000  
Biology 2200 (Main Subfield  
course)  
Chemistry 1110  
GLER course (List I)  
GLER course (List II)

#### Year 3, Fall

Agricultural Studies 3300  
Main Subfield course 3000/4000  
level  
Science elective  
Elective  
Elective

#### Year 4, Fall

Main Subfield course 3000/4000  
level  
Main Subfield course  
Science elective 3000/4000 level  
Science elective  
Elective

#### Year 1, Spring

Biology 1020  
Statistics 1770  
Second Subfield course  
GLER course (List I)  
GLER course (List II)

#### Year 2, Spring

Main Subfield course 3000/4000  
level  
Second Subfield course  
GLER course (List I)  
Science elective  
Elective

#### Year 3, Spring

Technical Studies Semester (15.0  
credit hours)  
Students will receive credit for the  
following (upon successful completion  
and receipt of transcripts):  
• 2 Agricultural Studies 3000-level  
science courses  
• 3 Agricultural Studies 2000-level  
science courses

#### Year 4, Spring

Agricultural Studies 4000  
Agricultural Studies 4300<sup>1</sup>  
Main Subfield course 3000/4000  
level  
Elective  
Elective

<sup>1</sup> Semester of offering may vary. Students should consult the Coordinator of Agricultural Studies regarding the semester of offering of this course.

**Note:** Students choosing to complete requirements for the Concentration in Agricultural Business should choose those prescribed courses in place of non-science electives. Courses in Economics or Political Science from the "Three of" list will also fulfill List II: Social Science Courses for the General Liberal Education Requirement.

Students choosing to complete requirements for the Concentration in Geographical Information Science should choose those prescribed courses in place of science electives.

**Reminder:** For the B.Sc., students must include, among the 40 courses, at least 25 courses from the list Science Courses (2012/2013 Calendar, Part 7, Section 20, p. 115 and Part 4, Section 11, List III: Science Courses, p. 92).

### With Geography as the Six-Course Subfield

#### Year 1, Fall

Agricultural Studies 1000  
Biology 1010  
Economics 1010  
Geography 1000  
One of: Computer Science 1620,  
Mathematics 1560, Physics 1050

#### Year 2, Fall

Biology 2000  
Chemistry 1110  
Main Subfield course 2000 level  
Science elective  
Elective

#### Year 2, Spring

Agricultural Studies 3300  
Main Subfield course 3000/4000  
level  
Second Subfield course  
Science elective  
Elective

#### Year 4, Fall

Main Subfield course 3000/4000  
level  
Main Subfield course 3000/4000  
level  
Science elective 3000/4000 level  
Elective  
Elective

#### Year 1, Spring

Biology 1020  
Main Subfield course 2000 level  
GLER course (List I)  
GLER course (List I)  
GLER course (List II)

#### Year 2, Spring

Statistics 1770  
Second Subfield course  
GLER course (List I)  
GLER course (List II)  
Elective

#### Year 3, Spring

Technical Studies Semester (15.0  
credit hours)  
Students will receive credit for the  
following (upon successful completion  
and receipt of transcripts):  
• 2 Agricultural Studies 3000-level  
science courses  
• 3 Agricultural Studies 2000-level  
science courses

#### Year 4, Spring

Agricultural Studies 4000  
Agricultural Studies 4300<sup>1</sup>  
Main Subfield course 3000/4000  
level  
Elective  
Elective

<sup>1</sup> Semester of offering may vary. Students should consult the Coordinator of Agricultural Studies regarding the semester of offering of this course.

**Note:** Students choosing to complete requirements for the Concentration in Agricultural Business should choose those prescribed courses in place of non-science electives. Courses in Economics or Political Science from the "Three of" list will also fulfill List II: Social Science Courses for the General Liberal Education Requirement.

Students choosing to complete requirements for the Concentration in Geographical Information Science should choose those prescribed courses in place of science electives.

**Reminder:** For the B.Sc., students must include, among the 40 courses, at least 25 courses from the list Science Courses (2012/2013 Calendar, Part 7, Section 20, p. 115 and Part 4, Section 11, List III: Science Courses, p. 92).

