



Program Planning Guide

Current and past Program Planning Guides are available on the UofL website at www.uleth.ca/ross/ppgs/ppg.html

Calendar Year: 2012/2013

Faculty: Arts & Science

About the Multidisciplinary Major in Agricultural Biotechnology

The Departments of Biological Sciences, Chemistry and Biochemistry, and Economics jointly offer instruction leading to a multidisciplinary major in Agricultural Biotechnology. The program provides background for a diverse range of activities such as graduate study in the life sciences and career development within the agricultural industry.

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 Biotechnology early in the program for further information.

Students Pursuing Medicine or Veterinary Medicine

Students with an interest in Medicine at the University of Alberta or University of Calgary, or in Veterinary Medicine at the University of Saskatchewan, should consult the Program Planning Enclosures available at the Student Program Services Office (SU060) or at www.uleth.ca/ross/ppgs/ppg.html.

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 Biotechnology 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	1000	Chemistry 30** and Mathematics 30-1 or Pure Mathematics 30*
		<i>Recommended: Mathematics 31 and Physics 30</i>
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>
	1050	Mathematics 30-1 or Pure Mathematics 30*
		<i>Recommended: One course in the physical sciences at the 20 level or above</i>

* 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.

Bachelor of Science Agricultural Biotechnology

Program Requirements

The B.Sc. degree with a multidisciplinary major in Agricultural Biotechnology requires 40 semester courses, including 23 courses in the major.

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, 3400, 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.

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.

Program Worksheet

Name : _____ ID : _____

Required courses:

- _____ 1. Agricultural Studies 1000 - The Evolution of Agriculture
- _____ 2. Biochemistry 2000 - Introductory Biochemistry
- _____ 3. Biology 1010 - Cellular Basis of Life
- _____ 4. Biology 1020 - Diversity of Life
- _____ 5. Biology 2000 - Principles of Genetics
- _____ 6. Biology 2200 - Principles of Ecology
- _____ 7. Biology 3000 - Gene Expression and Regulation
- _____ 8. One of:
 - _____ * Biology 3005 - Genome Maintenance
 - _____ * Biology 3115 - Principles of Cell Growth
- _____ 9. Biology 3105 - Signal Transduction
- _____ 10. Biology 3210 - Experimental Methods in Molecular and Cellular Biology
- _____ 11. Biology 3300 - Evolution
- _____ 12. Biology 3400 - Principles of Microbiology
- _____ 13. One of:
 - _____ Biology 3420 - Animal Physiology
 - _____ Biology 3460 - Plant Physiology
- _____ 14. Biology 4100 - Advances in Agricultural Biotechnology
- _____ 15. Chemistry 1000 - General Chemistry I
- _____ 16. Chemistry 2000 - General Chemistry II
- _____ 17. Chemistry 2500 - Organic Chemistry I
- _____ 18. Chemistry 2600 - Organic Chemistry II
- _____ 19. Economics 1010 - Introduction to Microeconomics

- _____ 20. One of:
 _____ Economics 2150 - Economics of Agricultural Issues
 _____ Economics 2350 - Economics of Agricultural Markets I
- _____ 21. Economics 3300 - Agricultural Policy I
- _____ 22. One of:
 _____ Mathematics 1410 - Elementary Linear Algebra
 _____ Mathematics 1560 - Calculus I
- _____ 23. One of:
 _____ Physics 1000 - Introduction to Physics I
 _____ Physics 1050 - Introduction to Biophysics

**Students are advised to take both Biology 3005 and Biology 3115.*

Statistics 1770 - Introduction to Probability and Statistics is strongly recommended.

Note: *Students are required to complete an additional six Science courses for the B.Sc. (i.e. at least 25 courses on the list of Science courses must be included in the program - see Section 20. Divisional Course Designation, p. 115 and Part 4, Section 11, List III: Science Courses in the 2012/2013 UofL Calendar; p. 92). In selecting these additional Science courses, students should consider the Neuroscience courses in cell biology that complement the Agricultural Biotechnology program. These include:*

Neuroscience 2600 - Brain and Behaviour

Neuroscience 3600 - Fundamental Neurobiology

Students are advised to consult with the Departments of Biological Sciences, Chemistry and Biochemistry, Neuroscience, and Psychology, or the Coordinator of Agricultural Biotechnology for further information.

Optional Concentration

Concentration: Agricultural Business

Agricultural Biotechnology 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:

- _____ 24. Management 2020 - Marketing
- _____ 25. Management 2100 - Introductory Accounting
- _____ 26-28. 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.

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>Year 1, Fall Agricultural Studies 1000 Biology 1020 Chemistry 1000 Economics 1010 Mathematics 1410 or Mathematics 1560</p>	<p>Year 1, Spring Biology 1010 Chemistry 2000 Physics 1000 or Physics 1050 GLER course (List I) GLER course (List I)</p>
<p>Year 2, Fall Biology 2000 Biology 2200 Chemistry 2500 Economics 2150 or Economics 2350 GLER course (List II)</p>	<p>Year 2, Spring Biochemistry 2000 Biology 3400 Chemistry 2600 Statistics 1770 (<i>recommended</i>) GLER course (List I)</p>
<p>Year 3, Fall Biology 3000 Biology 3005¹ Biology 3105 Economics 3300 Elective</p>	<p>Year 3, Spring Biology 3115¹ Biology 3300 Science Elective Science Elective Elective</p>
<p>Year 4, Fall Biology 3210 Biology 3420 or Biology 3460² Science Elective Elective Elective</p>	<p>Year 4, Spring Biology 4100 Science Elective Elective Elective Elective</p>

¹ Students are required to complete one of Biology 3005 or Biology 3115, but are advised to take both of these courses.

² Semester of offering may vary.

Note: Students choosing to complete requirements for the Concentration in Agricultural Business should choose those prescribed courses in place of non-science 'Electives.' One course in Economics or Political Science from the 'Three of' list may replace the GLER course (List II) in Fall Year Two.

Students are strongly advised to consult with the Department of Biological Sciences and the Department of Chemistry and Biochemistry regarding the sequencing of the above courses.

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).