

University of  
Lethbridge



## Program Planning Guide

**Departments:** Biological Sciences, Chemistry and Biochemistry, and Economics

**Calendar Year:** 2018/2019

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

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

**Bachelor of Science**  
**Agricultural Biotechnology**

**Major in Agricultural Biotechnology:**

[www.uleth.ca/artsci/agricultural-biotechnology](http://www.uleth.ca/artsci/agricultural-biotechnology)

**Academic Calendar:**

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

**High School Admission Requirements:**

[www.uleth.ca/ross/admissions/undergrad/high-school](http://www.uleth.ca/ross/admissions/undergrad/high-school)

**Current and Past Program Planning Guides:**

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

**Faculty of Arts and Science Advising:**

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

**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. Agricultural Biotechnology

Completion of at least 40 courses (120.0 credit hours) with a grade point average of at least 2.00.

### Major Requirements (23 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. Biology 3105 - Signal Transduction
- \_\_\_\_\_ 9. Biology 3210 - Experimental Methods in Molecular and Cellular Biology
- \_\_\_\_\_ 10. Biology 3300 - Evolution
- \_\_\_\_\_ 11. Biology 3400 - Principles of Microbiology
- \_\_\_\_\_ 12. Biology 4100 - Advances in Agricultural Biotechnology
- \_\_\_\_\_ 13. Chemistry 1000 - General Chemistry I
- \_\_\_\_\_ 14. Chemistry 2000 - General Chemistry II
- \_\_\_\_\_ 15. Chemistry 2500 - Organic Chemistry I
- \_\_\_\_\_ 16. Chemistry 2600 - Organic Chemistry II
- \_\_\_\_\_ 17. Economics 1010 - Introduction to Microeconomics
- \_\_\_\_\_ 18. Economics 3300 - Agricultural Policy I
- \_\_\_\_\_ 19. **One of:**
  - \_\_\_\_\_ Biology 3005 - Genome Maintenance
  - \_\_\_\_\_ Biology 3115 - Principles of Cell Growth
- \_\_\_\_\_ 20. **One of:**
  - \_\_\_\_\_ Biology 3420 - Animal Physiology
  - \_\_\_\_\_ Biology 3460 - Plant Physiology
- \_\_\_\_\_ 21. **One of:**
  - \_\_\_\_\_ Economics 2150 - Economics of Agricultural Issues
  - \_\_\_\_\_ Economics 2350 - Economics of Agricultural Markets I
- \_\_\_\_\_ 22. **One of:**
  - \_\_\_\_\_ Mathematics 1410 - Elementary Linear Algebra
  - \_\_\_\_\_ Mathematics 1560 - Calculus I
  - \_\_\_\_\_ Mathematics 1565 - Accelerated Calculus I
- \_\_\_\_\_ 23. **One of:**
  - \_\_\_\_\_ Physics 1000 - Introduction to Physics I
  - \_\_\_\_\_ Physics 1050 - Introduction to Biophysics

### Other Courses (minimum 17 courses)

- |          |           |
|----------|-----------|
| 1. _____ | 10. _____ |
| 2. _____ | 11. _____ |
| 3. _____ | 12. _____ |
| 4. _____ | 13. _____ |
| 5. _____ | 14. _____ |
| 6. _____ | 15. _____ |
| 7. _____ | 16. _____ |
| 8. _____ | 17. _____ |
| 9. _____ |           |

### Recommended courses:

- Neuroscience 2600 - Brain and Behaviour
- Neuroscience 3600 - Fundamental Neurobiology
- Statistics 1770 - Introduction to Probability and Statistics

## Notes

Students are advised to complete both Biology 3005 and Biology 3115 as part of their Agricultural Biotechnology major (only one of these is required).

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.

See also:

- Pre-Professional Transfer Programs
- Bachelor of Science - Biological Sciences
- Bachelor of Science - Biochemistry
- Bachelor of Science - Environmental Science

**Completion of the Liberal Education List Requirement (Lib Ed Requirement).**

Only four courses (12.0 credit hours) in total may be counted from any one discipline toward the Lib Ed Requirement. Disciplines are identified by separate course subject codes.

Only four courses (12.0 credit hours) in total from the Faculties of Education (EDUC), Health Sciences (ABHL, ADCS, HLSC, NURS, PUBH, and TREC), and Management (MGT) may be counted towards the Lib Ed Requirement.

See the 2018/2019 Calendar, p. 95, 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) and courses numbered in the range of 0520 to 0530.

- |          |                  |
|----------|------------------|
| 1. _____ | 7. _____         |
| 2. _____ | 8. _____         |
| 3. _____ | 9. _____         |
| 4. _____ | 10. _____        |
| 5. _____ | 11. _____        |
| 6. _____ | 12. _____ (max.) |

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). Out-of-faculty courses (i.e. labelled ABHL, ADCS, CDEV, CRED, EDUC, HLSC, MGT, NURS, PUBH, and TREC) will not meet this requirement.

- |          |                  |
|----------|------------------|
| 1. _____ | 9. _____         |
| 2. _____ | 10. _____        |
| 3. _____ | 11. _____        |
| 4. _____ | 12. _____        |
| 5. _____ | 13. _____        |
| 6. _____ | 14. _____        |
| 7. _____ | 15. _____ (min.) |
| 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 six credit hours in Activity courses (i.e. courses labelled PHAC and MUSE) may be completed for credit towards the degree, except for Kinesiology majors (not more than 15.0 credit hours) and Music majors (not more than 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 ABHL, ADCS, CDEV, CRED, EDUC, HLSC, MGT, NURS, PUBH, and TREC). Courses cross-listed between the Faculty of Arts and Science and another Faculty do not count towards this limit.

**Residence requirement:**

Degree: a minimum of 20 courses (60.0 credit hours) must be completed at the University of Lethbridge, including at least 10 Arts and Science courses (30.0 credit hours) at the 3000/4000 level.

Major: at least half of the courses required in the major must be completed at the University of Lethbridge.

**Minor (Optional):** \_\_\_\_\_  
 See the 2018/2019 Calendar, p. 291, for eligible minors.

- |          |          |
|----------|----------|
| 1. _____ | 4. _____ |
| 2. _____ | 5. _____ |
| 3. _____ | 6. _____ |

**Concentration: Agricultural Business (Optional)**  
 See the 2018/2019 Calendar, p. 110, 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 term. 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>                      Agricultural Studies 1000  <b>Biology 1010 or Biology 1020</b>  <b>Chemistry 1000</b>                      Economics 1010                      Mathematics 1410, 1560, or 1565</p>	<p><b>Year 1, Spring</b>  <b>Biology 1020 or Biology 1010</b>  <b>Chemistry 2000</b>                      Physics 1000 or Physics 1050                      Lib Ed Requirement course                      Lib Ed Requirement course</p>
<p><b>Year 2, Fall</b>  <b>Biology 2000</b>  <b>Biology 2200</b>  <b>Chemistry 2500</b>                      Economics 2150 or                      Economics 2350                      Lib Ed Requirement course</p>	<p><b>Year 2, Spring</b>                      Biochemistry 2000                      Biology 3400                      Chemistry 2600                      Statistics 1770 (<i>recommended</i>)                      Lib Ed Requirement course</p>
<p><b>Year 3, Fall</b>                      Biology 3000                      Biology 3005<sup>1</sup>                      Biology 3105                      Economics 3300                      Elective</p>	<p><b>Year 3, Spring</b>                      Biology 3115<sup>1</sup>                      Biology 3300                      Elective 3000/4000 level                      Elective 3000/4000 level                      Elective</p>
<p><b>Year 4, Fall</b>                      Biology 3210                      Biology 3420 or Biology 3460<sup>2</sup>                      Elective 3000/4000 level                      Elective                      Elective</p>	<p><b>Year 4, Spring</b>                      Biology 4100<sup>2</sup>                      Elective 3000/4000 level                      Elective 3000/4000 level                      Elective                      Elective</p>

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

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

**Note:** Courses in **bold** in Years 1 and 2 of the sample sequence are prerequisite(s) for required courses and should be completed early in your program. Students are advised to review the prerequisites for electives courses within the major and plan accordingly.

Students choosing to complete requirements for the Concentration in Agricultural Business should choose those prescribed courses in place of Elective courses.

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

**Lib Ed Requirement course:** A course that could count toward the Liberal Education List Requirement. You may use courses in your major towards this 12-course requirement. See the 2018/2019 University of Lethbridge Calendar, School of Liberal Education 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 2018/2019 University of Lethbridge Calendar, Course Catalogue). LBED 1000 and 2000 may be used toward satisfying the Lib Ed Requirement.

**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).

