



PROGRAM PLANNING GUIDE

ID:

Name: _____

Bachelor of Science

Agricultural Biotechnology



Agricultural biotechnology examines agriculture and the natural world, emphasizing the relationships between food production, the environment, science and society. As a multidisciplinary major, agricultural biotechnology takes full advantage of resources and course offerings in the Departments of Biological Sciences, Chemistry & Biochemistry and Economics. This multi-faceted approach allows you to explore new applications in science and develop fresh perspectives about how to address challenges in food production through changes in economics, production or diversification.

What determines my program requirements?

Please refer to the Academic Calendar (www.ulethbridge.ca/ross/academic-calendar) for complete program information.

Calendar Year: 2024/2025 - Your calendar year is set to the academic year you are admitted (or readmitted) and you should follow the requirements for that year for the duration of your program.

Faculty/School: Faculty of Arts and Science (www.ulethbridge.ca/artsci)

Program(s): Bachelor of Science

Major(s): Agricultural Biotechnology

Minor: A defined set of courses, designed to provide depth in a particular discipline, study in an interdisciplinary area, or focus on a theme-related topic. To learn more about optional minors see www.ulethbridge.ca/ross/minors.

Am I admissible to this program?

Admission: www.ulethbridge.ca/ross/admissions/undergrad

Transfer: www.ulethbridge.ca/ross/transfer-resources

When/How do I apply to the University?

Deadlines: www.ulethbridge.ca/ross/admissions/undergrad/deadlines

Step-by-Step: www.ulethbridge.ca/ross/admissions/step-by-step

Where can I find information on courses?

Course Catalogue: www.ulethbridge.ca/ross/courses

Registration Guide: www.ulethbridge.ca/ross/registration-guide

When can I register for classes?

Register early! (March for Summer and Fall; November for Winter)

Registration Dates: www.ulethbridge.ca/ross/registration-dates

How can I enhance my program?

Career Bridge: www.ulethbridge.ca/career-bridge

Co-op Education: www.ulethbridge.ca/career-bridge/co-operative-education

Honours Thesis: www.ulethbridge.ca/ross/undergraduate-thesis

Double Major: www.ulethbridge.ca/ross/double-major

What supports are available to students?

Student Services: www.ulethbridge.ca/campus-life/student-services

Student Success Centre: www.ulethbridge.ca/student-success-centre

Accessible Learning: www.ulethbridge.ca/ross/alc

Counselling Services: www.ulethbridge.ca/counselling





Required courses and notes

Major Requirements (22 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 2150 - Biostatistics
- _____ 7. Biology 2200 - Principles of Ecology
- _____ 8. Biology 2300 - Cell Biology
- _____ 9. Biology 3210 - Experimental Methods in Molecular and Cellular Biology
- _____ 10. Biology 3400 - Principles of Microbiology
- _____ 11. Chemistry 1000 - General Chemistry I
- _____ 12. Chemistry 2000 - General Chemistry II
- _____ 13. Chemistry 2500 - Organic Chemistry I
- _____ 14. Economics 1010 - Introduction to Microeconomics
- _____ 15. Economics 3300 - Agricultural Policy I
- _____ 16.-17. **Two of:**
 - _____ Biology 3000 - Gene Expression and Regulation
 - _____ Biology 3005 - Genomes
 - _____ Biology 3110 - Cell Signalling
- _____ 18. **One of:**
 - _____ Biology 3420 - Animal Physiology
 - _____ Biology 3460 - Plant Physiology
- _____ 19. **One of:**
 - _____ Biology 4100 - Advances in Biotechnology
 - _____ Biology 4130 - Medical Genomics
- _____ 20. **One of:**
 - _____ Economics 2150 - Economics of Agricultural Issues
 - _____ Economics 2350 - Economics of Agricultural Markets I
- _____ 21. **One of:**
 - _____ Mathematics 1410 - Elementary Linear Algebra
 - _____ Mathematics 1560 - Calculus I
 - _____ Mathematics 1565 - Accelerated Calculus I
- _____ 22. **One of:**
 - _____ Physics 1000 - Introduction to Physics I
 - _____ Physics 1050 - Introduction to Biophysics

Notes:

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.

Electives (18 Courses)

_____ 23.-40. Eighteen additional courses (54.0 credit hours) chosen to complete program requirements

- _____ 23. _____
- _____ 24. _____
- _____ 25. _____
- _____ 26. _____
- _____ 27. _____
- _____ 28. _____
- _____ 29. _____
- _____ 30. _____
- _____ 31. _____
- _____ 32. _____
- _____ 33. _____
- _____ 34. _____
- _____ 35. _____
- _____ 36. _____
- _____ 37. _____
- _____ 38. _____
- _____ 39. _____
- _____ 40. _____

Optional Concentration: Agricultural Business

Courses taken to complete the concentration will fill in as electives in the program requirements above.

For information about the Agricultural Business concentration, see **Faculty of Arts and Science** in the 2024/2025 University of Lethbridge Calendar, www.ulethbridge.ca/ross/academic-calendar.

_____ 1.-5. Required Courses

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

Required courses and notes

Liberal Education List 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. Cross-listed courses count toward the limit for both disciplines (e.g. IGBM 3250/INDG 3250 counts toward the limit for Dhillon School of Business courses and Indigenous Studies).

Only four courses (12.0 credit hours) in total from the Faculty of Education (EDUC), Faculty of Health Sciences (ABHL, ADCS, HLSC, NURS, PUBH, and TREC), and the Dhillon School of Business (ACCT, AGEM, FINC, HRLR, IGBM, IMG T, MGT, and MKTG) may be counted towards the Lib Ed Requirement.

To determine if a course has a Liberal Education designation, see School of Liberal Education in the 2024/2025 University of Lethbridge Undergraduate Calendar, www.ulethbridge.ca/ross/academic-calendar.

_____ **1.-4. List I: Fine Arts and Humanities**

- _____ 1. _____
- _____ 2. _____
- _____ 3. _____
- _____ 4. _____

_____ **5.-8. List II: Social Science**

- _____ 5. _____
- _____ 6. _____
- _____ 7. _____
- _____ 8. _____

_____ **9.-12. List III: Science**

- _____ 9. _____
- _____ 10. _____
- _____ 11. _____
- _____ 12. _____

General Requirements

- _____ A minimum of 40 courses (120.0 credit hours) with a GPA of at least 2.00.
- _____ A maximum of five Independent Study courses (15.0 credit hours) may be completed for credit towards the degree.
- _____ A maximum of 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.
- _____ A maximum of 24 courses (72.0 credit hours) may be completed from any one discipline for credit towards the degree. Disciplines are identified by a specific course label (e.g. KNES, ASTR, and HIST are separate disciplines).
- _____ A maximum of 6.0 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).
- _____ A maximum of six courses (18.0 credit hours) from disciplines offered outside the Faculty of Arts and Science, Faculty of Fine Arts, or School of Liberal Education may be completed for credit towards the degree (i.e. labelled ABHL, ACCT, ADCS, AGEM, CDEV, CRED, EDUC, FINC, HLSC, HRLR, IGBM, IMG T, MGT, MKTG, NURS, PUBH, and TREC). Courses cross-listed between the Faculty of Arts and Science and another Faculty or School do not count towards this limit.
- _____ Residence requirement: a minimum of 20 courses (60.0 credit hours) must be completed at the University of Lethbridge, including at least 10 courses (30.0 credit hours) from disciplines offered by the Faculty of Arts and Science, Faculty of Fine Arts, or School of Liberal Education at the 3000/4000 level. At least half of the courses required in the major must be completed at the University of Lethbridge.

A **maximum** of 12 courses (36.0 credit hours) may be completed at the 1000 level (or lower) for credit towards the degree, excluding Activity courses (labelled PHAC and MUSE) and courses numbered in the range of 0520 to 0530.

_____ **1.-12. Introductory Course Limit**

- _____ 1. _____
- _____ 2. _____
- _____ 3. _____
- _____ 4. _____
- _____ 5. _____
- _____ 6. _____
- _____ 7. _____
- _____ 8. _____
- _____ 9. _____
- _____ 10. _____
- _____ 11. _____
- _____ 12. _____

A **minimum** of 15 courses (45.0 credit hours) from disciplines offered by the Faculty of Arts and Science, Faculty of Fine Arts, or School of Liberal Education at the 3000/4000 level, excluding Activity courses (labelled PHAC and MUSE). Out-of-faculty courses (i.e. labelled ABHL, ACCT, ADCS, AGEM, CDEV, CRED, EDUC, FINC, HLSC, HRLR, IGBM, IMG T, MGT, MKTG, NURS, PUBH, and TREC) will not meet this requirement.

_____ **1.-15. Senior Course Requirement**

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

Optional Minor:

For information about minors see **Minors** in the 2024/2025 University of Lethbridge Calendar, www.ulethbridge.ca/ross/academic-calendar. Consult with an Academic Advisor if you wish to add a minor to your program.

_____ **1.-6. Required Courses**

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

Recommended Course Sequence

Shown below is the recommended sequence of courses for your degree. Consult timetables for course offerings, prerequisites, and corequisites before registering each term as some courses may have limited offerings (ie. once a year, alternating years, or only offered in the Fall or Winter terms).

Consult with an Academic Advisor in your faculty if you wish to alter this sequence with regard to the specifically listed courses.

Note that this sequence was prepared based on course scheduling at the time of publication and may change during your studies.

First Year

Agricultural Studies 1000

Biology 1010

Biology 1020

Chemistry 1000

Chemistry 2000

Economics 1010

One of: Physics 1000 or Physics 1050

Mathematics Requirement

Lib Ed Requirement course

Lib Ed Requirement course

Second Year

Biochemistry 2000

Biology 2000

Biology 2150

Biology 2200

Biology 2300

Chemistry 2500

One of: Economics 2150 or Economics 2350

Lib Ed Requirement course

Lib Ed Requirement course

Elective

Third Year

Economics 3300

Biology 3400

Biology 3000-level list course

Biology 3000-level list course

Elective 3000/4000 level

Elective 3000/4000 level

Elective 3000/4000 level

Elective

Elective

Elective

Fourth Year

Biology 3210

One of: Biology 3420 or Biology 3460

One of: Biology 4100 or Biology 4130

Elective 3000/4000 level

Elective 3000/4000 level

Elective 3000/4000 level

Elective 3000/4000 level

Elective 3000/4000 level

Elective

Elective

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 elective 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.