



# PROGRAM PLANNING GUIDE

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

ID: 

## Bachelor of Science / Bachelor of Education

### Chemistry / Science Education



As an Education major, a student develops a strong knowledge base in the subject area they intend to teach. They also receive in-depth preparation in how to teach, including both general and subject area instructional methods.

Chemistry is often called the Central Science as it deals specifically with the 110 elements that comprise all matter. Chemists pursue the study of matter down to the level of individual atoms, and, in particular, focus on molecules, which are aggregates of elements that act as larger units.

#### What determines my program requirements?

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

**Calendar Year:** 2025/2026 - 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](http://www.ulethbridge.ca/artsci)) and Faculty of Education ([www.ulethbridge.ca/education](http://www.ulethbridge.ca/education))

**Program(s):** Bachelor of Science / Bachelor of Education

**Major(s):** Chemistry / Science Education

**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](http://www.ulethbridge.ca/ross/minors).

#### Am I admissible to this program?

**Admission:** [www.ulethbridge.ca/ross/admissions/undergrad](http://www.ulethbridge.ca/ross/admissions/undergrad)

**Transfer:** [www.ulethbridge.ca/ross/transfer-resources](http://www.ulethbridge.ca/ross/transfer-resources)

#### When/How do I apply to the University?

**Deadlines:** [www.ulethbridge.ca/ross/admissions/undergrad/deadlines](http://www.ulethbridge.ca/ross/admissions/undergrad/deadlines)

**Step-by-Step:** [www.ulethbridge.ca/ross/admissions/step-by-step](http://www.ulethbridge.ca/ross/admissions/step-by-step)

#### Where can I find information on courses?

**Course Catalogue:** [www.ulethbridge.ca/ross/courses](http://www.ulethbridge.ca/ross/courses)

**Registration Guide:** [www.ulethbridge.ca/ross/registration-guide](http://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](http://www.ulethbridge.ca/ross/registration-dates)

#### How can I enhance my program?

**Career Bridge:** [www.ulethbridge.ca/career-bridge](http://www.ulethbridge.ca/career-bridge)

**Education Specializations:**

[www.ulethbridge.ca/education/programs-degrees/undergraduate-studies/specializations](http://www.ulethbridge.ca/education/programs-degrees/undergraduate-studies/specializations)

#### What supports are available to students?

**Student Services:** [www.ulethbridge.ca/campus-life/student-services](http://www.ulethbridge.ca/campus-life/student-services)

**Student Success Centre:** [www.ulethbridge.ca/student-success-centre](http://www.ulethbridge.ca/student-success-centre)

**Accessible Learning:** [www.ulethbridge.ca/ross/alc](http://www.ulethbridge.ca/ross/alc)

**Counselling Services:** [www.ulethbridge.ca/counselling](http://www.ulethbridge.ca/counselling)





# PROGRAM REQUIREMENTS (2025/2026)

## Required courses and notes

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

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Students begin in the Faculty of Arts and Science where they progress toward completion of Faculty of Arts and Science degree requirements, and prepare to meet the admission requirements for the Faculty of Education. Please note that completion of admission requirements does not guarantee admission to the Faculty of Education.

### Major Requirements (15 Courses)

- \_\_\_\_\_ 1. Chemistry 1000 - General Chemistry I
- \_\_\_\_\_ 2. Chemistry 2000 - General Chemistry II
- \_\_\_\_\_ 3. Chemistry 2410 - Analytical Chemistry I
- \_\_\_\_\_ 4. Chemistry 2500 - Organic Chemistry I
- \_\_\_\_\_ 5. Chemistry 2600 - Organic Chemistry II
- \_\_\_\_\_ 6. Chemistry 2740 - Physical Chemistry I
- \_\_\_\_\_ 7. Mathematics 1410 - Elementary Linear Algebra
- \_\_\_\_\_ 8. Physics 2130 - Waves, Optics and Sound
- \_\_\_\_\_ 9. **One of:**
  - \_\_\_\_\_ Mathematics 1560 - Calculus I
  - \_\_\_\_\_ Mathematics 1565 - Accelerated Calculus I (recommended)
- \_\_\_\_\_ 10. **One of:**
  - \_\_\_\_\_ Mathematics 2560 - Calculus II
  - \_\_\_\_\_ Mathematics 2565 - Accelerated Calculus II (recommended)
- \_\_\_\_\_ 11. **One of:**
  - \_\_\_\_\_ Physics 1000 - Introduction to Physics I (recommended)
  - \_\_\_\_\_ Physics 1050 - Introduction to Biophysics
  - \_\_\_\_\_ <sup>1</sup>Engineering 2060 - Engineering Mechanics
- \_\_\_\_\_ 12.-15. **Four of:**
  - \_\_\_\_\_ Biochemistry 2000 - Introductory Biochemistry
  - \_\_\_\_\_ Biochemistry 3100 - Proteins, Enzymes and Nucleic Acids
  - \_\_\_\_\_ Biochemistry 3300 - Bioenergetics and Metabolism
  - \_\_\_\_\_ Chemistry 3250 - Contemporary Chemistry
  - \_\_\_\_\_ Chemistry 3410 - Instrumental Methods of Analysis
  - \_\_\_\_\_ Chemistry 3730 - Physical Chemistry II
  - \_\_\_\_\_ Chemistry 3830 - Inorganic Chemistry I
  - \_\_\_\_\_ Chemistry 3840 - Inorganic Chemistry II

### Recommended courses:

- Biology 1010 - Cellular Basis of Life
- Physics 2000 - Introduction to Physics II

### Notes

<sup>1</sup> This course has a prerequisite or corequisite that is not required for the major.

The major in Chemistry for the Combined Degrees program is not accredited by the Canadian Society of Chemistry, nor is it sufficient for pursuing graduate studies in Chemistry.

Chemistry courses are organized in sequences and must be taken in the proper order. In addition, several of the 3000-level courses are offered only in alternate years. Students are advised to seek help in planning their programs from the Departmental Advisor or from any faculty member in the Department of Chemistry and Biochemistry at an early stage of their studies.

### Other Courses (minimum 15 courses)

Courses offered by the Faculty of Arts and Science, Faculty of Fine Arts, or School of Liberal Education only (no courses labelled ACCT, ADCS, AGEM, CDEV, CRED, EDUC, FINC, GLBU, HLSC, HRLR, IGBM, INHL, MGT, MKTG, NURS, PUBH, or TREC unless cross-listed with a course from one of the above faculties).

- \_\_\_\_\_ 16.-30. Fifteen additional courses (45.0 credit hours) chosen to complete program requirements
  - \_\_\_\_\_ 16. \_\_\_\_\_
  - \_\_\_\_\_ 17. \_\_\_\_\_
  - \_\_\_\_\_ 18. \_\_\_\_\_
  - \_\_\_\_\_ 19. \_\_\_\_\_
  - \_\_\_\_\_ 20. \_\_\_\_\_
  - \_\_\_\_\_ 21. \_\_\_\_\_
  - \_\_\_\_\_ 22. \_\_\_\_\_
  - \_\_\_\_\_ 23. \_\_\_\_\_
  - \_\_\_\_\_ 24. \_\_\_\_\_
  - \_\_\_\_\_ 25. \_\_\_\_\_
  - \_\_\_\_\_ 26. \_\_\_\_\_
  - \_\_\_\_\_ 27. \_\_\_\_\_
  - \_\_\_\_\_ 28. \_\_\_\_\_
  - \_\_\_\_\_ 29. \_\_\_\_\_
  - \_\_\_\_\_ 30. \_\_\_\_\_

### Education Requirements (20-course equivalent)

- \_\_\_\_\_ 31. Education 2500 - Orientation to Teaching (3.0 credit hours)
- \_\_\_\_\_ 32.-36. Professional Semester I (15.0 credit hours)
- \_\_\_\_\_ 37.-41. Professional Semester II (15.0 credit hours)
- \_\_\_\_\_ 42.-46. Professional Semester III (15.0 credit hours)
- \_\_\_\_\_ 47. Education Foundation (3.0 credit hours) at the 43xx level
- \_\_\_\_\_ 48.-50. Three Education Electives (9.0 credit hours) at the 3000 or 4000 level
  - \_\_\_\_\_ 48. \_\_\_\_\_
  - \_\_\_\_\_ 49. \_\_\_\_\_
  - \_\_\_\_\_ 50. \_\_\_\_\_



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### 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 (ADCS, HLSC, INHL, NURS, PUBH, and TREC), and the Dhillon School of Business (ACCT, AGEM, FINC, GLBU, HRLR, IGBM, 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 2025/2026 University of Lethbridge Undergraduate Calendar, [www.ulethbridge.ca/ross/academic-calendar](http://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

#### Bachelor of Arts or Bachelor of Science

\_\_\_\_\_ A minimum of 30 courses (90.0 credit hours) from disciplines offered by the Faculty of Arts and Science, Faculty of Fine Arts, or School of Liberal Education with a GPA of at least 2.00 (on the University of Lethbridge 4.0 scale).

\_\_\_\_\_ A maximum of three Independent Study courses (9.0 credit hours) may be completed for credit toward the degree.

\_\_\_\_\_ A maximum of three Disciplinary Credit Applied Studies courses (9.0 credit hours) may be completed for credit towards the degree. Students may, in addition, complete Applied Studies 2000, 2001, 2010, and 2011. For Art majors, Museum Studies Internship courses (Museum Studies 4000, 4001, and 4002) are included in this limit.

\_\_\_\_\_ A maximum of 17 courses (51.0 credit hours) may be completed from any one discipline (see **Faculty of Arts and Science** in the 2025/2026 University of Lethbridge Calendar, [www.ulethbridge.ca/ross/academic-calendar](http://www.ulethbridge.ca/ross/academic-calendar)). 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).

\_\_\_\_\_ Residence requirement: a minimum of 15 courses (45.0 credit hours) offered by the Faculty of Arts and Science, Faculty of Fine Arts, or School of Liberal Education must be completed at the University of Lethbridge. At least half of the courses required in the major must be completed at the University of Lethbridge.

A **maximum** of 10 courses (30.0 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.-10. Introductory Course Limit

- \_\_\_\_\_ 1. \_\_\_\_\_
- \_\_\_\_\_ 2. \_\_\_\_\_
- \_\_\_\_\_ 3. \_\_\_\_\_
- \_\_\_\_\_ 4. \_\_\_\_\_
- \_\_\_\_\_ 5. \_\_\_\_\_
- \_\_\_\_\_ 6. \_\_\_\_\_
- \_\_\_\_\_ 7. \_\_\_\_\_
- \_\_\_\_\_ 8. \_\_\_\_\_
- \_\_\_\_\_ 9. \_\_\_\_\_
- \_\_\_\_\_ 10. \_\_\_\_\_

A **minimum** of 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, excluding Activity courses (labelled PHAC and MUSE). Out-of-faculty courses (i.e. labelled ACCT, ADCS, AGEM, CDEV, CRED, EDUC, FINC, GLBU, HLSC, HRLR, IGBM, INHL, MGT, MKTG, NURS, PUBH, and TREC) will not meet this requirement.

#### 1.-10. Senior Course Requirement

- \_\_\_\_\_ 1. \_\_\_\_\_
- \_\_\_\_\_ 2. \_\_\_\_\_
- \_\_\_\_\_ 3. \_\_\_\_\_
- \_\_\_\_\_ 4. \_\_\_\_\_
- \_\_\_\_\_ 5. \_\_\_\_\_
- \_\_\_\_\_ 6. \_\_\_\_\_
- \_\_\_\_\_ 7. \_\_\_\_\_
- \_\_\_\_\_ 8. \_\_\_\_\_
- \_\_\_\_\_ 9. \_\_\_\_\_
- \_\_\_\_\_ 10. \_\_\_\_\_

#### Bachelor of Education

\_\_\_\_\_ Completion of the equivalent of 20 courses (60.0 credit hours) in Education

\_\_\_\_\_ Maintenance of a program grade point average of at least 2.50 in Education courses and the appropriate major.

\_\_\_\_\_ Residence requirement: a minimum of 15 courses (45.0 credit hours) offered by the Faculty of Education must be completed at the University of Lethbridge.

#### Optional Education Minor: \_\_\_\_\_

For information about Education Minors, see **Minors for Education Programs**, [www.ulethbridge.ca/ross/minors](http://www.ulethbridge.ca/ross/minors).

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. \_\_\_\_\_ (Education methods req.)



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

**Chemistry 1000**

**Chemistry 2000**

Mathematics 1410

One of: **Mathematics 1565** or **Mathematics 1560**

One of: **Mathematics 2565** or **Mathematics 2560**

One of: **Physics 1000** or **Physics 1050**

**Physics 2130**

Lib Ed Requirement course

Lib Ed Requirement course

Lib Ed Requirement course

### Second Year

Biology 1010 (recommended)

**Chemistry 2410**

**Chemistry 2500**

**Chemistry 2600**

**Chemistry 2740**

Lib Ed Requirement course

Lib Ed Requirement course

Lib Ed Requirement course

Lib Ed Requirement course

Education 2500

### Admission to the Faculty of Education

Education 2500 must be completed (with a Pass Recommend) before admission. It may be taken in the winter or summer term immediately prior to the fall intake

### Third Year (Fall)

Professional Semester I (15.0 credit hours)

*Curriculum and Instruction, Educational Psychology, Language in Education,*

*Assessment and Learning, Teaching Seminar, Indigenous Education*

*Practicum - Equivalent to 125 hours in a school*

### Third Year (Winter)

One of: Chemistry or Biochemistry list course

One of: Chemistry or Biochemistry list course

Lib Ed Requirement course 3000/4000 level

Elective 3000/4000 level

Elective 3000/4000 level

### Fourth Year (Fall)

One of: Chemistry or Biochemistry list course

One of: Chemistry or Biochemistry list course

Elective 3000/4000 level

Elective 3000/4000 level

Elective 3000/4000 level

### Fourth Year (Winter)

Professional Semester II (15.0 credit hours)

*Principles of Curriculum and Instruction for Majors, The Educational Psychology*

*of Exceptional Learners, Social Context of Schooling, Evaluation and Reporting*

*Practicum - Equivalent to 150 hours in a school*

**Elementary Education students will reverse the Fifth Year fall and winter terms and complete PS III in the winter.**

### Fifth Year (Fall)

Professional Semester III (15.0 credit hours)

*Internship - Students are assigned to schools for approximately 200 hours in a*

*practicum and assume full responsibility for a classroom for approximately one-*

*half of that time*

### Fifth Year (Winter)

Education Foundation course (43xx)

Education elective 3000/4000 level

Education elective 3000/4000 level

Education elective 3000/4000 level

Elective 3000/4000 level

**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.

## Faculty of Education Admission

To be considered for admission to the Faculty of Education, successful completion of the following is required:

- 14 graded term courses (42.0 credit hours).
- **Education Admission GPA:** Minimum cumulative grade point average of 2.50 on all U of L and transferable courses taken within the terms containing the last 14 courses (42.0 credit hours). All courses must be graded.
- Minimum of five courses (15.0 credit hours) in the major.
- **Major GPA:** Minimum cumulative grade point average of 2.50 on all graded courses comprising the major, including all transferable courses.
- Credit in Education 2500 - Orientation to Teaching (or equivalent) prior to the fall program intake, including a favourable recommendation from the instructor.

Students are advised to contact Student Program Services in the Faculty of Education ([edu.sps@uleth.ca](mailto:edu.sps@uleth.ca); TH421; tel. 403-329-2254) for guidelines regarding the requirements stated above. For specific information on admission requirements, please refer to the Combined Degrees section of the Academic Calendar: [www.ulethbridge.ca/ross/academic-calendar](http://www.ulethbridge.ca/ross/academic-calendar).

Students of Indigenous descent, and students with a significant shift in academic performance, are advised to refer to the current Calendar for the Faculty of Education's Special Case Admission policies.