

University of  
Lethbridge



## Program Planning Guide

**Program:** Bachelor of Science/Bachelor of Education (B.Sc./B.Ed.)

**Major (Arts and Science):** Chemistry

**Major (Education):** Science Education

**Calendar Year:** 2019/2020

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

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

**Major in Chemistry:**

[www.uleth.ca/artsci/chemistry-biochemistry](http://www.uleth.ca/artsci/chemistry-biochemistry)

**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)

**Faculty of Education Admission Requirements:**

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

**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  
M2102

**Faculty of Education Advising:**

[www.uleth.ca/education/student-advising](http://www.uleth.ca/education/student-advising)  
[edu.sps@uleth.ca](mailto:edu.sps@uleth.ca)  
403-329-2254  
TH421

Chemistry/Science Education

Bachelor of Science/Bachelor of Education

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 or Faculty of Education for advising information.

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

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

**B.Sc./B.Ed. (Chemistry/Science Education)**

Completion of at least 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 grade point average of at least 2.00.

Completion of the equivalent of 20 courses (60.0 credit hours) in Education with a program grade point average of at least 2.50 in Education courses and the appropriate major.

**Major Requirements (15 courses)**

**Required 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
- \_\_\_\_\_ 7. Mathematics 1410 - Elementary Linear Algebra
- \_\_\_\_\_ 8. Physics 2000 - Introduction to Physics II
  
- \_\_\_\_\_ **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 - Analytical Chemistry II
  - \_\_\_\_\_ Chemistry 3730 - Advanced Physical Chemistry
  - \_\_\_\_\_ Chemistry 3830 - Inorganic Chemistry I
  - \_\_\_\_\_ Chemistry 3840 - Inorganic Chemistry II

**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 ABHL, ADCS, CDEV, CRED, EDUC, HLSC, MGT, NURS, PUBH, or TREC unless cross-listed with a course from one of the above faculties)*

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

**Education Requirements (20-course equivalent)**

- \_\_\_\_\_ Education 2500 - Practicum I - Orientation to Teaching
- \_\_\_\_\_ Professional Semester I (15.0 credit hours)
- \_\_\_\_\_ Professional Semester II (15.0 credit hours)
- \_\_\_\_\_ Professional Semester III (15.0 credit hours)

Education Foundation: \_\_\_\_\_

**Three Education Electives:**

- |          |          |
|----------|----------|
| 1. _____ | 3. _____ |
| 2. _____ |          |

**Recommended course:**

Biology 1010 - Cellular Basis of Life

**Notes**

<sup>1</sup>Prerequisite required: Engineering 2000

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.

**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. Out-of-faculty courses (i.e. labelled ABHL, ADCS, CDEV, CRED, HLSC, MGT, NURS, PUBH, and TREC) will not meet this requirement. See the 2019/2020 Calendar, p. 83, 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 10 courses (30.0 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. \_\_\_\_\_ 6. \_\_\_\_\_
- 2. \_\_\_\_\_ 7. \_\_\_\_\_
- 3. \_\_\_\_\_ 8. \_\_\_\_\_
- 4. \_\_\_\_\_ 9. \_\_\_\_\_
- 5. \_\_\_\_\_ 10. \_\_\_\_\_ (max.)

Completion of at least 10 courses (30.0 credit hours) from disciplines offered by the Faculty of Arts and Science, Faculty of Fine Arts, or the School of Liberal Education 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. \_\_\_\_\_ 6. \_\_\_\_\_
- 2. \_\_\_\_\_ 7. \_\_\_\_\_
- 3. \_\_\_\_\_ 8. \_\_\_\_\_
- 4. \_\_\_\_\_ 9. \_\_\_\_\_
- 5. \_\_\_\_\_ 10. \_\_\_\_\_ (min.)

\_\_\_\_ Not more than three Independent Study courses (9.0 credit hours) may be completed for credit towards the degree.

\_\_\_\_ Not more than 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.

\_\_\_\_ Not more than 17 courses (51.0 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).

\_\_\_\_ **Residence Requirement:**

**Degree:**

**Art and Science:** at least 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.

**Education:** at least 15 courses (45.0 credit hours) offered by the Faculty of Education must be completed at the University of Lethbridge.

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

**Education Minor (If Applicable):** \_\_\_\_\_

*See the 2019/2020 Calendar, p. 146, for eligible minors.*

- 1. \_\_\_\_\_ 4. \_\_\_\_\_
  - 2. \_\_\_\_\_ 5. \_\_\_\_\_
  - 3. \_\_\_\_\_ 6. \_\_\_\_\_
- Education (methods requirement)

**Education Specialization (If Applicable):** \_\_\_\_\_

*See the 2019/2020 Calendar, p. 150, for details.*

- 1. \_\_\_\_\_ 4. \_\_\_\_\_
- 2. \_\_\_\_\_ 5. \_\_\_\_\_
- 3. \_\_\_\_\_

**Please refer to page 4 of this guide for Faculty of Education admission requirements.**

## 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 five 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>  <b>Chemistry 1000</b>                      Mathematics 1410  <b>Mathematics 1565 or</b>  <b>Mathematics 1560</b>  <b>Physics 1000 or Physics 1050</b>                      Lib Ed Requirement course</p> <p><b>Year 2, Fall</b>                      Biology 1010 (<i>recommended</i>)  <b>Chemistry 2410</b>  <b>Chemistry 2500</b>                      Education 2500<sup>1</sup>                      Lib Ed Requirement course</p> <p><b>Year 3, Fall</b>                      Professional Semester I</p> <p><b>Year 4, Fall</b>                      Chemistry or Biochemistry list course                      Chemistry or Biochemistry list course                      Elective 3000/4000 level                      Elective 3000/4000 level                      Elective 3000/4000 level</p> <p><b>Year 5, Fall</b>                      Professional Semester III</p>	<p><b>Year 1, Spring</b>  <b>Chemistry 2000</b>  <b>Mathematics 2565 or</b>  <b>Mathematics 2560</b>  <b>Physics 2000</b>                      Lib Ed Requirement course                      Lib Ed Requirement course</p> <p><b>Year 2, Spring</b>  <b>Chemistry 2600</b>  <b>Chemistry 2740</b>                      Lib Ed Requirement course                      Lib Ed Requirement course                      Lib Ed Requirement course</p> <p><b>Year 3, Spring</b>                      Chemistry or Biochemistry list course                      Chemistry or Biochemistry list course                      Lib Ed Requirement course 3000/4000 level                      Elective 3000/4000 level                      Elective 3000/4000 level</p> <p><b>Year 4, Spring</b>                      Professional Semester II</p> <p><b>Year 5, Spring</b>                      Education Foundation course                      Education elective                      Education elective                      Education elective                      Elective 3000/4000 level</p>
<p><b>Elementary Education and Inclusive Education students will reverse the fall and spring terms in Year 5 and complete PS III in the spring.</b></p>	

<sup>1</sup> Education 2500 must be completed (with a Pass Recommend) before admission. It may also be taken in the spring or summer term immediately prior to the fall intake.

**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 are strongly advised to consult with the Department of Chemistry and Biochemistry regarding the sequence 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. As some courses may not fit specific program requirements, students should consult their Faculty advising office. See the 2019/2020 University of Lethbridge Calendar, School of Liberal Education for complete information.

The School of Liberal Education 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 2019/2020 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 17 courses from any one discipline).

## Faculty of Education Admission

Admission to the Faculty of Education requires successful completion of the following:

- \_\_\_\_\_ 14 graded term courses (42.0 credit hours).
- \_\_\_\_\_ 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.
- \_\_\_\_\_ Minimum cumulative grade point average of 2.50 on all graded courses comprising the major, including all transferable courses.
- \_\_\_\_\_ Credit in Education 2500 - Practicum I - Orientation to Teaching (or equivalent) including a favourable recommendation from the instructor.

Students are advised to contact Student Program Services in the Faculty of Education (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.uleth.ca/ross/academic-calendar/cal\\_doc.pdf](http://www.uleth.ca/ross/academic-calendar/cal_doc.pdf)

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 policy.

Application and Document deadlines:

[www.uleth.ca/ross/admissions/undergrad/deadlines](http://www.uleth.ca/ross/admissions/undergrad/deadlines)

### Combined Degrees Program:

Students begin this program in the Faculty of Arts and Science where they progress toward completion 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.**

