

University of
Lethbridge



Program Planning Guide

Department: Chemistry and Biochemistry

Calendar Year: 2019/2020

Name: _____

ID: _____

Bachelor of Science
Chemistry

Major in Chemistry:

www.uleth.ca/artsci/chemistry-biochemistry

Academic Calendar:

www.uleth.ca/ross/academic-calendar

High School Admission Requirements:

www.uleth.ca/ross/admissions/undergrad/high-school

Current and Past Program Planning Guides:

www.uleth.ca/ross/ppgs

Faculty of Arts and Science Advising:

www.uleth.ca/artsci/advising
artsci.advising@uleth.ca
403-329-5106
M2102

Co-operative Education:

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. Chemistry

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

Major Requirements (24 courses)

- _____ 1. Biochemistry 2000 - Introductory Biochemistry
- _____ 2. Biology 1010 - Cellular Basis of Life
- _____ 3. Chemistry 1000 - General Chemistry I
- _____ 4. Chemistry 2000 - General Chemistry II
- _____ 5. Chemistry 2410 - Analytical Chemistry I
- _____ 6. Chemistry 2500 - Organic Chemistry I
- _____ 7. Chemistry 2600 - Organic Chemistry II
- _____ 8. Chemistry 2740 - Physical Chemistry
- _____ 9. Chemistry 3250 - Contemporary Chemistry
- _____ 10. Chemistry 3410 - Analytical Chemistry II
- _____ 11. Chemistry 3730 - Advanced Physical Chemistry
- _____ 12. Chemistry 3830 - Inorganic Chemistry I
- _____ 13. Chemistry 3840 - Inorganic Chemistry II
- _____ 14. Mathematics 1410 - Elementary Linear Algebra
- _____ 15. Physics 2000 - Introduction to Physics II
- _____ 16. **One of:**
 - _____ Mathematics 1560 - Calculus I
 - _____ Mathematics 1565 - Accelerated Calculus I (recommended)
- _____ 17. **One of:**
 - _____ Mathematics 2560 - Calculus II
 - _____ Mathematics 2565 - Accelerated Calculus II (recommended)
- _____ 18. **One of:**
 - _____ Physics 1000 - Introduction to Physics I (recommended)
 - _____ Physics 1050 - Introduction to Biophysics
 - _____ ¹Engineering 2060 - Engineering Mechanics
- _____ 19-20. Two offerings (6.0 credit hours) chosen from the following list:²
 - Chemistry 4000 - Advanced Chemistry (Series)
 - Chemistry 4010 - Advanced Chemistry with Laboratory (Series)

- _____ 21-24. Four additional courses (12.0 credit hours) in Chemistry or Biochemistry chosen from the following list:²
 - Additional offerings of Chemistry 4000 - Advanced Chemistry (Series)
 - Additional offerings of Chemistry 4010 - Advanced Chemistry with Laboratory (Series)
 - Biochemistry 3100 - Proteins, Enzymes and Nucleic Acids
 - Biochemistry 3300 - Bioenergetics and Metabolism
 - Chemistry 3990 - Independent Study
 - Chemistry 4990 - Independent Study
 - Chemistry 4995 - Undergraduate Thesis (6.0 credit hours)
- 21. _____
- 22. _____
- 23. _____
- 24. _____

Other Courses (minimum 16 courses)

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

Notes

¹Has prerequisites: Engineering 2000 and Mathematics 1565.

²A minimum of two of the six selected courses must be lab-based. Offerings in the Chemistry 4000 Series do not meet this requirement. Chemistry 3990 and 4990 may meet this requirement if the Independent Study includes laboratory work.

This program has been accredited by the Canadian Society for Chemistry (CSC), which is the national organization representing chemists, and is acceptable for membership in the Association of the Chemical Profession of Alberta (ACPA). Students who complete a B.Sc. degree with the major in Chemistry outlined above will have a degree accredited by the CSC.

Those who plan to pursue graduate studies in Chemistry should take more than the minimum of 18 courses in Chemistry or Biochemistry and should obtain advice on their program from the department. Students can get credit for participating in original research as part of their studies, especially if preparing for advanced Chemistry degrees.

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 at an early stage of their studies are advised to seek help in planning their programs from the Department Advisor or from any faculty member in the Department of Chemistry and Biochemistry.

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 Faculty of Education (EDUC), Faculty of Health Sciences (ABHL, ADCS, HLSC, NURS, PUBH, and TREC), and the Dhillon School of Business (MGT) may be counted towards the Lib Ed 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 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, 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. _____ | 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 six courses (18.0 credit hours) from disciplines 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, 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 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.

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

Minor (Optional): _____
See the 2019/2020 Calendar, p. 277, for more information.

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

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>Year 1, Fall Chemistry 1000 Mathematics 1410 Mathematics 1565 or Mathematics 1560 Physics 1000 or Physics 1050 Lib Ed Requirement course</p> <p>Year 2, Fall Chemistry 2410 Chemistry 2500 Lib Ed Requirement course Lib Ed Requirement course Lib Ed Requirement course</p> <p>Year 3, Fall Biochemistry 2000 ¹ Chemistry 3730 or Chemistry 3830 Chemistry or Biochemistry list course Elective 3000/4000 level Elective</p> <p>Year 4, Fall Chemistry 3830 or Chemistry 3730 Chemistry 4000 or Chemistry 4010 Chemistry or Biochemistry list course Elective 3000/4000 level Elective</p>	<p>Year 1, Spring Biology 1010 Chemistry 2000 Mathematics 2565 or Mathematics 2560 Physics 2000 Lib Ed Requirement course</p> <p>Year 2, Spring Chemistry 2600 Chemistry 2740 Lib Ed Requirement course Lib Ed Requirement course Lib Ed Requirement course</p> <p>Year 3, Spring Chemistry 3410 or Chemistry 3840 Chemistry 3250 Chemistry or Biochemistry list course Elective 3000/4000 level Elective</p> <p>Year 4, Spring Chemistry 3840 or Chemistry 3410 Chemistry 4000 or Chemistry 4010 Chemistry or Biochemistry list course Elective 3000/4000 level Elective</p>
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¹ Biochemistry 2000 may be completed in Fall or Spring of Year 3.

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 sequencing of the above courses for Years 3 and 4. Many 3000-level courses are offered in alternate years.

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 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 24 courses from any one discipline).

