

University of  
Lethbridge



## Program Planning Guide

**Department:** Neuroscience

**Calendar Year:** 2019/2020

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

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

**Bachelor of Science**  
**Neuroscience**

**Major in Neuroscience:**

[www.uleth.ca/artsci/neuroscience](http://www.uleth.ca/artsci/neuroscience)

**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  
M2102

**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. Neuroscience**

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

**Major Requirements (22 courses)**

- \_\_\_\_\_ 1. Biology 1010 - Cellular Basis of Life
- \_\_\_\_\_ 2. Biology 1020 - Diversity of Life
- \_\_\_\_\_ 3. Biology 2000 - Principles of Genetics
- \_\_\_\_\_ 4. Neuroscience 2600 - Brain and Behaviour
- \_\_\_\_\_ 5. Neuroscience 3600 - Fundamental Neurobiology
- \_\_\_\_\_ 6. Psychology 2330 - Learning and Cognition
- \_\_\_\_\_ 7. Psychology 2700 - Behaviour and Evolution
  
- \_\_\_\_\_ 8-9. **Two of:**
  - \_\_\_\_\_ Biochemistry 2000 - Introductory Biochemistry
  - \_\_\_\_\_ Biology 3000 - Gene Expression and Regulation
  - \_\_\_\_\_ Biology 3105 - Signal Transduction
  - \_\_\_\_\_ Biology 3310 - Developmental Biology
  - \_\_\_\_\_ Biology 3400 - Principles of Microbiology
  - \_\_\_\_\_ Neuroscience 3625 - Cellular and Molecular Neurobiology
  
- \_\_\_\_\_ 10. **One of:**
  - \_\_\_\_\_ Philosophy 2220 - Philosophy of Mind
  - \_\_\_\_\_ Philosophy 2233 - Philosophy and the World View of Science: Earth and Life Sciences
  - \_\_\_\_\_ <sup>1</sup>Philosophy 3270 - Theory of Knowledge
  - \_\_\_\_\_ <sup>1</sup>Philosophy 3402 - Biomedical Ethics
  
- \_\_\_\_\_ 11. **One of:**
  - \_\_\_\_\_ Physics 1000 - Introduction to Physics I
  - \_\_\_\_\_ Physics 1050 - Introduction to Biophysics
  
- \_\_\_\_\_ 12. **One of:**
  - \_\_\_\_\_ Neuroscience 4630 - Neuroscience (Series)
  - \_\_\_\_\_ Neuroscience 4980 - Applied Studies
  - \_\_\_\_\_ Neuroscience 4990 - Independent Study
  - \_\_\_\_\_ <sup>2</sup>Neuroscience 4995 - Undergraduate Thesis
  
- \_\_\_\_\_ 13. **One of:**
  - \_\_\_\_\_ One course (3.0 credit hours) in English at the 1000 level or higher
  - \_\_\_\_\_ Writing 1000 - Introduction to Academic Writing
  
- \_\_\_\_\_ 14. **One of:**
  - \_\_\_\_\_ Neuroscience 3690 - Introduction to Programming and Statistics in MATLAB
  - \_\_\_\_\_ Psychology 2030 - Methods and Statistics
  - \_\_\_\_\_ Statistics 1770 - Introduction to Probability and Statistics

Three courses (9.0 credit hours) in Neuroscience or Psychology at the 3000/4000 level with a Science designation (see the 2019/2020 Calendar, List III: Science Courses, p. 85).

- 15. \_\_\_\_\_
- 16. \_\_\_\_\_
- 17. \_\_\_\_\_

**One of the following groups (a or b):**

- a.**
- \_\_\_\_\_ 18. Biochemistry 2000 - Introductory Biochemistry
  - \_\_\_\_\_ 19. Chemistry 1110 - Chemistry for Life Sciences I
  - \_\_\_\_\_ 20. Chemistry 2120 - Chemistry for Life Sciences II
- Two additional courses (6.0 credit hours) in Biology, Chemistry, Neuroscience, or Psychology at the 3000/4000 level with a Science Designation (See the 2019/2020 Calendar, List III: Science Courses, p. 85)
21. \_\_\_\_\_ 22. \_\_\_\_\_

**Note:** Students who choose this grouping may not choose Biochemistry 2000 as part of the "Two of" list left.

**OR**

- b.**
- \_\_\_\_\_ 18. Chemistry 1000 - General Chemistry I
  - \_\_\_\_\_ 19. Chemistry 2000 - General Chemistry II
  - \_\_\_\_\_ 20. Chemistry 2500 - Organic Chemistry I
  - \_\_\_\_\_ 21. Chemistry 2600 - Organic Chemistry II
- \_\_\_\_\_ 22. **One of:**
- \_\_\_\_\_ Mathematics 1410 - Elementary Linear Algebra
  - \_\_\_\_\_ Mathematics 1560 - Calculus I
  - \_\_\_\_\_ Mathematics 1565 - Accelerated Calculus I

**Other Courses (minimum 18 courses)**

- 1. \_\_\_\_\_
- 2. \_\_\_\_\_
- 3. \_\_\_\_\_
- 4. \_\_\_\_\_
- 5. \_\_\_\_\_
- 6. \_\_\_\_\_
- 7. \_\_\_\_\_
- 8. \_\_\_\_\_
- 9. \_\_\_\_\_
- 10. \_\_\_\_\_
- 11. \_\_\_\_\_
- 12. \_\_\_\_\_
- 13. \_\_\_\_\_
- 14. \_\_\_\_\_
- 15. \_\_\_\_\_
- 16. \_\_\_\_\_
- 17. \_\_\_\_\_
- 18. \_\_\_\_\_

**Notes**

<sup>1</sup>Prerequisite required: One of Philosophy 1000 or a 2000-level course (3.0 credit hours) in Philosophy.

<sup>2</sup>If Neuroscience 4995 (6.0 credit hours) is chosen, the requirement for three additional courses at the 3000/4000 level in Neuroscience or Psychology with a Science designation is reduced to two additional such courses.

It is strongly recommended that students who are planning to pursue graduate studies in the Neurosciences consider the Undergraduate Thesis option and include Neuroscience 3605 and Psychology 3400 in their program.

See also:

- Bachelor of Science - Psychology

**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><b>Year 1, Fall</b>  <b>Biology 1010 or Biology 1020</b>  <b>Chemistry 1000</b>                      Mathematics 1410, 1560, or 1565                      Lib Ed Requirement course                      Lib Ed Requirement course</p>	<p><b>Year 1, Spring</b>  <b>Biology 1020 or Biology 1010</b>  <b>Chemistry 2000</b>  <b>Neuroscience 2600</b>                      English 1900 or Writing 1000                      Lib Ed Requirement course</p>
<p><b>Year 2, Fall</b>  <b>Biology 2000</b>  <b>Chemistry 2500</b>                      Psychology 2330                      Psychology 2700                      Lib Ed Requirement course  <i>(Philosophy 1000 recommended)</i></p>	<p><b>Year 2, Spring</b>                      Chemistry 2600                      Physics 1000 or Physics 1050                      Statistics requirement                      Lib Ed Requirement course                      Lib Ed Requirement course</p>
<p><b>Year 3, Fall</b>                      Neuroscience 3600                      One "Two of:" List requirement <sup>1</sup>                      Elective 3000/4000 level                      Elective 3000/4000 level                      Elective</p>	<p><b>Year 3, Spring</b>                      Philosophy requirement <sup>2</sup>                      One "Two of:" List requirement <sup>1</sup>                      Elective 3000/4000 level                      Elective 3000/4000 level                      Elective</p>
<p><b>Year 4, Fall</b>                      One of: Neuroscience 4630, 4980, 4990, or 4995 <sup>3</sup>                      Neuroscience or Psychology 3000/4000 level (Science)                      Elective 3000/4000 level                      Elective 3000/4000 level                      Elective</p>	<p><b>Year 4, Spring</b>                      Neuroscience or Psychology 3000/4000 level (Science)                      Neuroscience or Psychology 3000/4000 level (Science)                      Elective 3000/4000 level                      Elective 3000/4000 level                      Elective 3000/4000 level</p>

<sup>1</sup> Students require Two of: Biochemistry 2000; Biology 3000, 3105, 3310, 3400; Neuroscience 3625. Term of offering for these courses may vary. Please check with the Departments of Biological Sciences, Chemistry and Biochemistry, or Neuroscience, respectively.

<sup>2</sup> One of Philosophy 2220, 2233, 3270, or 3402 is required. Term of offering may vary.

<sup>3</sup> Neuroscience 4995 is a 6.0 credit course.

**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.

The above sequence includes only courses from the second Chemistry group. Plan accordingly if you are interested in completing the courses from the first Chemistry group (see p. 3 of the Program Planning Guide).

## 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).

