

University of  
Lethbridge



## Program Planning Guide

**Departments:** Geography, and Physics and Astronomy

**Calendar Year:** 2018/2019

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

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

**Bachelor of Science**  
**Remote Sensing**

**Major in Remote Sensing:**

[www.uleth.ca/artsci/remote-sensing](http://www.uleth.ca/artsci/remote-sensing)

**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  
SU060

**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. Remote Sensing**

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

**Major Requirements (21 courses)**

**Other Courses (minimum 19 courses)**

- \_\_\_\_\_ 1. Computer Science 1620 - Fundamentals of Programming I
- \_\_\_\_\_ 2. Geography 1000 - Introduction to Physical Geography
- \_\_\_\_\_ 3. Geography 2030 - Geomorphology
- \_\_\_\_\_ 4. Geography 2300 - Weather and Climate
- \_\_\_\_\_ 5. Geography 2700 - Geographical Data and Analysis
- \_\_\_\_\_ 6. Geography 2735 - Introduction to Geographical Information Science
- \_\_\_\_\_ 7. Geography 3720 - Remote Sensing
- \_\_\_\_\_ 8. Geography 4725 - Advanced Remote Sensing
- \_\_\_\_\_ 9. Mathematics 1410 - Elementary Linear Algebra
- \_\_\_\_\_ 10. Mathematics 2570 - Calculus III
- \_\_\_\_\_ 11. Mathematics 2580 - Calculus IV
- \_\_\_\_\_ 12. Physics 2000 - Introduction to Physics II
- \_\_\_\_\_ 13. Physics 2120 - Introduction to Physics III
- \_\_\_\_\_ 14. Physics 2130 - Waves, Optics and Sound
- \_\_\_\_\_ 15. Physics 2925 - Introduction to Experimental Physics
- \_\_\_\_\_ 16. Physics 3650 - Optics
- \_\_\_\_\_ 17. Remote Sensing 4650 - Physics of Remote Sensing
- \_\_\_\_\_ 18. **One of:**
  - \_\_\_\_\_ Geography 4710 - Remote Sensing Field Techniques
  - \_\_\_\_\_ Geography 4751 - Project in Spatial Modelling
  - \_\_\_\_\_ Geography 4753 - Seminar in Remote Sensing
- \_\_\_\_\_ 19. **One of:**
  - \_\_\_\_\_ Mathematics 1560 - Calculus I
  - \_\_\_\_\_ Mathematics 1565 - Accelerated Calculus I (recommended)
- \_\_\_\_\_ 20. **One of:**
  - \_\_\_\_\_ Mathematics 2560 - Calculus II
  - \_\_\_\_\_ Mathematics 2565 - Accelerated Calculus II (recommended)
- \_\_\_\_\_ 21. **One of:**
  - \_\_\_\_\_ Physics 1000 - Introduction to Physics I
  - \_\_\_\_\_ Physics 1050 - Introduction to Biophysics
  - \_\_\_\_\_ Engineering 2060 - Engineering Mechanics

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

**Notes**

See also:

- Bachelor of Science - Geography
- Bachelor of Science - Physics

**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 Faculties of Education (EDUC), Health Sciences (ABHL, ADCS, HLSC, NURS, PUBH, and TREC), and Management (MGT) may be counted towards the Lib Ed Requirement.

See the 2018/2019 Calendar, p. 95, 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 or the Faculty of Fine Arts 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 four courses (12.0 credit hours) from disciplines offered outside the Faculty of Arts and Science or the Faculty of Fine Arts 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 Arts and Science courses (30.0 credit hours) 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 2018/2019 Calendar, p. 291, for eligible minors.

- |          |          |
|----------|----------|
| 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><br/> <b>Geography 1000</b><br/> <b>Mathematics 1410</b><br/> <b>Mathematics 1565 or</b><br/> <b>Mathematics 1560</b><br/> <b>Physics 1000 or Physics 1050</b><br/>           Lib Ed Requirement course</p> <p><b>Year 2, Fall</b><br/>           Geography 2030<br/> <b>Mathematics 2570</b><br/> <b>Physics 2120</b><br/>           Lib Ed Requirement course<br/>           Lib Ed Requirement course</p> <p><b>Year 3, Fall</b><br/>           Geography 3720<br/>           Physics 3650<sup>1</sup><br/>           Lib Ed Requirement course<br/>           Lib Ed Requirement course<br/>           Elective 3000/4000 level</p> <p><b>Year 4, Fall</b><br/>           Remote Sensing 4650<sup>1</sup><br/>           One of: Geography 4710<sup>1</sup>, 4751<sup>1</sup>,<br/>           or 4753<sup>1</sup><br/>           Elective 3000/4000 level<br/>           Elective 3000/4000 level<br/>           Elective 3000/4000 level</p> | <p><b>Year 1, Spring</b><br/>           Computer Science 1620<br/> <b>Geography 2735</b><br/> <b>Mathematics 2565 or</b><br/> <b>Mathematics 2560</b><br/> <b>Physics 2000</b><br/>           Lib Ed Requirement course</p> <p><b>Year 2, Spring</b><br/>           Geography 2300<br/>           Geography 2700<br/> <b>Mathematics 2580</b><br/> <b>Physics 2130</b><br/>           Lib Ed Requirement course</p> <p><b>Year 3, Spring</b><br/>           Physics 2925<br/>           Lib Ed Requirement course<br/>           Elective 3000/4000 level<br/>           Elective 3000/4000 level<br/>           Elective</p> <p><b>Year 4, Spring</b><br/>           Geography 4725<br/>           Elective 3000/4000 level<br/>           Elective 3000/4000 level<br/>           Elective 3000/4000 level<br/>           Elective 3000/4000 level</p> |
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<sup>1</sup> Term of offering may vary.

**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.

## 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 2018/2019 University of Lethbridge Calendar, School of Liberal Education for complete information.

The Faculty of Arts and Science 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 2018/2019 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).