



PROGRAM PLANNING GUIDE

Name: _____

ID:

Bachelor of Science

Computer Science and Geographical Information Science



The Computer Science and Geographical Information Science program is structured to provide a firm theoretical, technical and applied background in the geographical information sciences (GIS) that draws extensively on computer science foundations. This major provides a strong basis for further study at the graduate level in an established field of research, while also providing training in an area of employment opportunity that neither the Department of Mathematics & Computer Science nor the Department of Geography & Environment alone can provide.

What determines my program requirements?

Please refer to the Academic Calendar (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)

Program(s): Bachelor of Science

Major(s): Computer Science and Geographical Information Science

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.

Am I admissible to this program?

Admission: www.ulethbridge.ca/ross/admissions/undergrad

Transfer: www.ulethbridge.ca/ross/transfer-resources

When/How do I apply to the University?

Deadlines: www.ulethbridge.ca/ross/admissions/undergrad/deadlines

Step-by-Step: www.ulethbridge.ca/ross/admissions/step-by-step

Where can I find information on courses?

Course Catalogue: www.ulethbridge.ca/ross/courses

Registration Guide: 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

How can I enhance my program?

Career Bridge: www.ulethbridge.ca/career-bridge

Co-op Education: www.ulethbridge.ca/career-bridge/co-operative-education

Honours Thesis: www.ulethbridge.ca/ross/undergraduate-thesis

Double Major: www.ulethbridge.ca/ross/double-major

What supports are available to students?

Student Services: www.ulethbridge.ca/campus-life/student-services

Student Success Centre: www.ulethbridge.ca/student-success-centre

Accessible Learning: www.ulethbridge.ca/ross/alc

Counselling Services: www.ulethbridge.ca/counselling





Required courses and notes

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Major Requirements (22 Courses)

- _____ 1. Computer Science 1620 - Fundamentals of Programming I
- _____ 2. Computer Science 1820 - Discrete Structures
- _____ 3. Computer Science 2620 - Fundamentals of Programming II
- _____ 4. Computer Science 2720 - Practical Software Development
- _____ 5. Computer Science 3620 - Data Structures and Algorithms
- _____ 6. Computer Science 3660 - Introduction to Database Systems
- _____ 7. Computer Science 3710 - Computer Graphics
- _____ 8. Computer Science 4660 - Database Management Systems
- _____ 9. Geography 1000 - Introduction to Physical Geography
- _____ 10. Geography 1200 - Introduction to Human Geography
- _____ 11. Geography 2700 - Geographical Data and Analysis
- _____ 12. Geography 2735 - Introduction to Geographical Information Science
- _____ 13. Geography 3720 - Remote Sensing
- _____ 14. Geography 3740 - Geographical Information Systems
- _____ 15. Geography 4725 - Advanced Remote Sensing
- _____ 16. Geography 4740 - Advanced Geographical Information Systems
- _____ 17. **One of:**
 - _____ Geography 4400 - Advanced Hydrology
 - _____ Geography 4700 - Advanced Digital Mapping
 - _____ Geography 4710 - Remote Sensing Field Techniques
 - _____ Geography 4751 - Spatial Modelling
 - _____ Geography 4753 - Seminar in Remote Sensing
- _____ 18-21. **Four of:**
 - _____ Any of the courses listed above but not already selected as required courses
 - _____ Computer Science 2610 - Introduction to Digital Systems
 - _____ Computer Science 3720 - Introduction to Software Engineering
 - _____ ¹ Computer Science 3740 - Programming Languages
 - _____ Computer Science 3750 - Artificial Intelligence
 - _____ Computer Science 3770 - Human-Computer Interaction
 - _____ Computer Science 3780 - Data Communications and Networking
 - _____ Geography 2030 - Geomorphology
 - _____ Geography 2300 - Weather and Climate
 - _____ Geography 3400 - Hydrology
 - _____ Geography 3700 - Mapping in the Cloud
 - _____ Geography 3710 - Field Techniques in the Earth Sciences
 - _____ Geography 3750 - GIS Applications in Human Geography
 - _____ Geography 4730 - Spatial Statistics
 - _____ ¹ Statistics 2780 - Statistical Inference
- _____ 22. One course (3.0 credit hours) in Computer Science at the 4000 level, excluding Computer Science 4850 (Topics), Computer Science 4980 (Applied Studies), and Computer Science 4990 (Independent Study)

Electives (18 Courses)

- _____ 23-40. Eighteen additional courses (54.0 credit hours) chosen to complete program requirements
- _____ 23. _____
- _____ 24. _____
- _____ 25. _____
- _____ 26. _____
- _____ 27. _____
- _____ 28. _____
- _____ 29. _____
- _____ 30. _____
- _____ 31. _____
- _____ 32. _____
- _____ 33. _____
- _____ 34. _____
- _____ 35. _____
- _____ 36. _____
- _____ 37. _____
- _____ 38. _____
- _____ 39. _____
- _____ 40. _____

Notes

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



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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.

_____ **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

- _____ A minimum of 40 courses (120.0 credit hours) with a GPA of at least 2.00.
- _____ A maximum of five Independent Study courses (15.0 credit hours) may be completed for credit towards the degree.
- _____ A maximum of 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.
- _____ A maximum of 24 courses (72.0 credit hours) may be completed from any one discipline for credit towards the degree. 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).
- _____ A maximum of six courses (18.0 credit hours) from disciplines offered 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 ACCT, ADCS, AGEM, CDEV, CRED, EDUC, FINC, GLBU, HLSC, HRLR, IGBM, INHL, MGT, MKTG, NURS, PUBH, and TREC). Courses cross-listed between the Faculty of Arts and Science and another Faculty or School do not count towards this limit.
- _____ Residence requirement: 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. At least half of the courses required in the major must be completed at the University of Lethbridge.

A **maximum** of 12 courses (36.0 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.-12. Introductory Course Limit**

- _____ 1. _____
- _____ 2. _____
- _____ 3. _____
- _____ 4. _____
- _____ 5. _____
- _____ 6. _____
- _____ 7. _____
- _____ 8. _____
- _____ 9. _____
- _____ 10. _____
- _____ 11. _____
- _____ 12. _____

A **minimum** of 15 courses (45.0 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.-15. Senior Course Requirement**

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

Optional Minor:

For information about minors see **Minors** in the 2025/2026 University of Lethbridge Calendar, www.ulethbridge.ca/ross/academic-calendar. 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. _____



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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

Computer Science 1620

Computer Science 1820

Computer Science 2620

Geography 1000

Geography 1200

Geography 2735

Lib Ed Requirement course

Lib Ed Requirement course

Lib Ed Requirement course

Lib Ed Requirement course

Second Year

Computer Science 2720

Computer Science 3620

Computer Science 3710

Geography 2700

Computer Science or Geography list course

Lib Ed Requirement course

Lib Ed Requirement course

Lib Ed Requirement course

Elective

Elective

Third Year

Computer Science 3660

Geography 3720

Geography 3740

Computer Science or Geography list course

Computer Science or Geography list course 3000/4000 level

Computer Science or Geography list course 3000/4000 level

Elective 3000/4000 level

Elective

Elective

Elective

Fourth Year

Computer Science 4660

Geography 4725

Geography 4740

Computer Science 4000 level

Geography 4000-level list course

Elective 3000/4000 level

Elective 3000/4000 level

Elective

Elective

Elective

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.