University of Lethbridge

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: 2026/2027 - 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

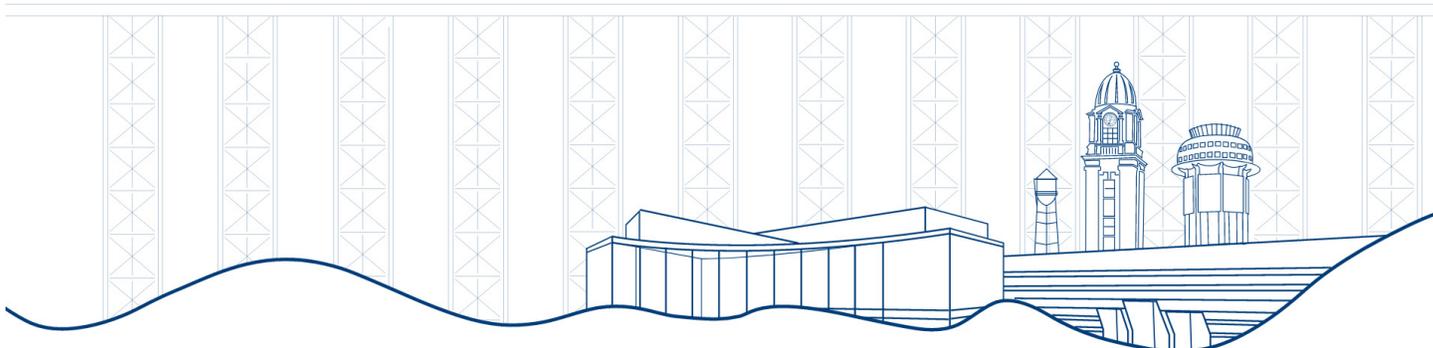**Double Major:** www.ulethbridge.ca/ross/double-major

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

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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 3060 - Glaciology and Glacial Geomorphology
    _____ Geography 3300 - Microclimatology
    _____ Geography 3400 - Hydrology
    _____ Geography 3700 - Mapping in the Cloud
    _____ Geography 3710 - Field Techniques in the Earth Sciences
    _____ [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. Geography 3225/Global Business 3225 counts toward the limit for Geography and Dhillon School of Business courses).

Only four courses (12.0 credit hours) in total from the Faculty of Education (EDUC), Faculty of Health Sciences (AMHC, HLSC, INHL, NURS, PUBH, and TREC), and the Dhillon School of Business (ACCT, AGEM, DGTR, 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 2026/2027 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, AGEM, AMHC, CDEV, CRED, DGTR, 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._____
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    _____ 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, AGEM, AMHC, CDEV, CRED, DGTR, 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._____
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    _____ 13._____
    _____ 14._____
    _____ 15._____

Optional Minor: _____

For information about minors see **Minors** in the 2026/2027 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._____

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 <u>may</u> 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.