ORIGINAL COURSE IMPLEMENTATION DATE: September 2024

REVISED COURSE IMPLEMENTATION DATE:

COURSE TO BE REVIEWED (six years after UEC approval)**:** March 2030

Course outline form version: 28/10/2022

OFFICIAL UNDERGRADUATE COURSE OUTLINE FORM

Note: The University reserves the right to amend course outlines as needed without notice.

Course Code and Number: GEOG 355	**Number of Credits:** 3 Course credit policy (105)
Course Full Title: GIS for Built Environment **Course Short Title:** GIS for Built Environment	
Faculty: Faculty of Science	**Department:** Planning, Geography and Environmental Studies

Calendar Description:

This course aims to equip students with mapping the built environment by learning the skills to conduct site suitability analysis, transportation modeling, environmental impact assessment, land use planning, and demographic analysis, fostering a comprehensive understanding of sustainable land use change through modules on spatial data analysis and mapping.

Prerequisites (or NONE):	45 university-level credits.
Corequisites (if applicable, or NONE):	
Pre/corequisites (if applicable, or NONE):	

Antirequisite Courses *(Cannot be taken for additional credit.)*

Former course code/number: **N/A**

Cross-listed with: **N/A**

Equivalent course(s):

(If offered in the previous five years, antirequisite course(s) will be included in the calendar description as a note that students with credit for the antirequisite course(s) cannot take this course for further credit.)

Typical Structure of Instructional Hours

Lecture/seminar	15
Tutorials/workshops	10
Supervised laboratory hours (computer lab)	20
Total hours	**45**

Scheduled Laboratory Hours

Labs to be scheduled independent of lecture hours: ☒ No ☐ Yes

Course Details

Special Topics course: **No**

(If yes, the course will be offered under different letter designations representing different topics.)

Directed Study course: **No**

(See policy 207 for more information.)

Grading System: **Letter grades**

Delivery Mode: **May be offered in multiple delivery modes**

Expected frequency: **Annually**

Maximum enrolment (for information only)**: 28**

Prior Learning Assessment and Recognition (PLAR)

PLAR is available for this course.

Transfer Credit *(See **bctransferguide.ca**.)*

Transfer credit already exists: **No**

Submit outline for (re)articulation: **No**

(If yes, fill in transfer credit form.)

Department approval	**Date of meeting:**	January 9, 2024
Faculty Council approval	**Date of meeting:**	February 2, 2024
Undergraduate Education Committee (UEC) approval	**Date of meeting:**	March 1, 2024

Learning Outcomes *(These should contribute to students' ability to meet program outcomes and thus Institutional Learning Outcomes.)*

Upon successful completion of this course, students will be able to:

1. Create geographic information systems in desktop and web environments that can be used by planners, environmentalist, conservationist, developers, urbanists, policy makers, managers and geographers to make informed land development and conservation decisions.
2. Demonstrate competency in the operation of geospatial technologies to acquire the skills necessary for constructing and managing spatial (geographic) databases effectively.
3. Plan and design land development projects utilizing software, database management, and research skills, while contextualizing within community dynamics.
4. Prepare graphic presentations including 3D visualization of urban spaces for the built environment.
5. Apply scientific principles and processes behind land use planning, land development, land conservation, and resource management.
6. Discuss how GIS can be used to understand and promote Indigenous perspectives in the Fraser Valley.
7. Explain how land use planning and resource conservation can use GIS to promote equity, diversity, and inclusion in their operations.

Recommended Evaluation Methods and Weighting *(Evaluation should align to learning outcomes.)*

Project:	20%	Lab work:	40%	Quizzes/tests:	30%
Holistic assessment:	10%		%		%

Details: Holistic assessment takes place through in-class presentations.

NOTE: The following sections may vary by instructor. Please see course syllabus available from the instructor.

Texts and Resource Materials *(Include online resources and Indigenous knowledge sources. Open Educational Resources (OER) should be included whenever possible. If more space is required, use the Supplemental Texts and Resource Materials form.)*

	Type	Author or description	Title and publication/access details	Year
1.	Textbook	Martin van Maarseveen, Javier Martinez, and Johannes Flacke	GIS in Sustainable Urban Planning and Management: A Global Perspective	2019
2.	Textbook	Ed Ferrari, Alasdair Rae	GIS for Planning and the Built Environment: An Introduction to Spatial Analysis	2019
3.	Textbook	Juliana Maantay and John Ziegler	GIS for the urban environment	2006
4.				

Course Content and Topics

Module 1: Introduction to GIS for the built environment
- GIS applications, what GIS is and why it is such a powerful tool to study
- Built environment, geovisualization, mapping principles, network analysis and decision making data in ArcGIS

Module 2: GIS for disaster management and hazard mitigation
- Emergency management and disaster response
- Volunteered Geographic Information (VGI) for the spatial planning of flood evacuation shelters
- Site analysis for land suitability for multiple land uses
- Graffiti and vandalism mapping in the community

Module 3: Modelling urban growth
- Mapping people with census data (Stats Canada)
- Sustainable growth through location intelligence - GIS applications in housing, downtowns, industrial, and Indigenous communities
- Archaeology and historic preservation with GIS

Module 4: Transportation planning
- Planning for Transit Oriented Development (TOD) using a TOD index
- Network analysis for a safe hub for equity, diversity, and inclusion

Module 5 Infrastructure mapping for planning and maintenance
- GIS mapping of a city sewer and storm drain system
- Geocoding for postal systems

Module 6: Stakeholder-based assessment: multiple criteria analysis
- Designing cycle routes for different target populations
- Landmark preservation
- GIS applications for advocacy planning and public information

Module 7: GIS project – living lab based on sustainable development goals
- Institutional issues proposing a GIS, initiating a project development cycle
- Develop a project flow chart using model builder