UNIVERSITY OF THE FRASER VALLEY

ORIGINAL COURSE IMPLEMENTATION DATE: Fall 2009
REVISED COURSE IMPLEMENTATION DATE: September 2017
COURSE TO BE REVIEWED: (six years after UEC approval) February 2019
Course outline form version: 09/15/14

OFFICIAL UNDERGRADUATE COURSE OUTLINE FORM

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

Course Code and Number: GEOG 454	**Number of Credits:** 4 Course credit policy (105)
Course Full Title: Geospatial Data Analysis Modeling **Course Short Title (if title exceeds 30 characters):** Geo. Data Analysis Modeling	
Faculty: Faculty of Social Sciences	**Department (or program if no department):** Geography and the Environment

Calendar Description:

Advanced course focusing on the theory and method of using geospatial data to model, analyze, and solve real-world problems. Introduction to methods of enhancing and classifying remotely sensed data, using advanced spatial analysis techniques, model building, and scripting in GIS.

Prerequisites (or NONE):	(One of the following: STAT 104 [formerly MATH 104] or STAT 106 [formerly MATH 106]) and (one of the following: COMP 120, COMP 150, COMP 152, or COMP 155) and GEOG 353. Note: GEOG 453 is recommended.
Corequisites (if applicable, or NONE):	
Pre/corequisites (if applicable, or NONE):	

Equivalent Courses (cannot be taken for additional credit)

Former course code/number:

Cross-listed with:

Equivalent course(s):

Note: Equivalent course(s) should be included in the calendar description by way of a note that students with credit for the equivalent course(s) cannot take this course for further credit.

Transfer Credit

Transfer credit already exists: ☐ Yes ☒ No

Transfer credit requested (OReg to submit to BCCAT):
☐ Yes ☒ No (if yes, fill in transfer credit form)

Resubmit revised outline for articulation: ☐ Yes ☒ No

To find out how this course transfers, see **bctransferguide.ca**.

Total Hours: 90

Typical structure of instructional hours:

Lecture hours	25
Seminars/tutorials/workshops	
Laboratory hours	65
Field experience hours	
Experiential (practicum, internship, etc.)	
Online learning activities	
Other contact hours:	
Total	**90**

Special Topics

Will the course be offered with different topics?
☐ Yes ☒ No

If yes, different lettered courses may be taken for credit:
☐ No ☐ Yes, repeat(s) ☐ Yes, no limit

Note: The specific topic will be recorded when offered.

Maximum enrolment (for information only): 25

Expected frequency of course offerings (every semester, annually, every other year, etc.): every other year

Department / Program Head or Director: Steven Marsh	**Date approved:**	December 2016
Faculty Council approval	**Date approved:**	January 2017
Campus-Wide Consultation (CWC)	**Date of posting:**	March 17, 2017
Dean/Associate VP: Lucy Lee	**Date approved:**	January 2017
Undergraduate Education Committee (UEC) approval	**Date of meeting:**	March 24, 2017

Learning Outcomes

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

- Use geospatial data analysis to solve problems in a geographic information science context
- Translate the theory of spatial analysis techniques into applications in academic and professional contexts.
- Write basic scripts and models to link GIS procedures and processes.
- Explain the strengths and limitations of geospatial data analysis in social and natural scientific contexts.
- Evaluate future directions and possibilities in the theory and application of geospatial data modeling.

Prior Learning Assessment and Recognition (PLAR)

☒ Yes ☐ No, PLAR cannot be awarded for this course because

Typical Instructional Methods (guest lecturers, presentations, online instruction, field trips, etc.; may vary at department's discretion)

Grading system: Letter Grades: ☒ Credit/No Credit: ☐ Labs to be scheduled independent of lecture hours: Yes ☐ No ☒

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

Typical Text(s) and Resource Materials (if more space is required, download Supplemental Texts and Resource Materials form)

	Author (surname, initials)	Title (article, book, journal, etc.)	Current ed.	Publisher	Year
1.	O'Sullivan, D and Unwin, D.J.	Geographic Information Analysis, 2nd Edition	☒	Wile: Hoboken	2010
2.	Jensen, J.R.	Introductory Digital Image Processing, 4th Edition	☒	Prentice Hall	2015
3.			☐		
4.			☐		
5.			☐		

Required Additional Supplies and Materials (software, hardware, tools, specialized clothing, etc.)

None.

Typical Evaluation Methods and Weighting

Final exam:	25%	Assignments:	%	Midterm exam:	25%	Practicum:	%
Quizzes/tests:	%	Lab work:	40%	Field experience:	%	Shop work:	%
Modeling Project:	10%	Other:	%	Other:	%	Total:	100%

Details (if necessary):

Typical Course Content and Topics

1. Turning digital imagery into data
2. Thematic information extraction I: unsupervised classification
3. Thematic information extraction II: supervised classification
4. Thematic information extraction III: introduction to advanced image classification methods
5. Spatial analysis of raster and vector data
6. Models and modeling in GIS
7. ArcGIS graphical model builder
8. Introduction to python in GIS I
9. Introduction to python in GIS II
10. Applied modeling using ArcGIS model builder and python