Western SocialScience

Geography and Environment

GEOG 3222 – Geographical Information Science II
Course Outline: Section 001 Winter 2025

1. Course Information

*Details about design and delivery of the course are listed below in Section 6

Classes Start	Spring Reading Week	Classes End	Study day(s)	Exam Period
January 6	February 17-23	April 4	April 5 & 6	April 7-30

January 14, 2025: Last day to add a second-term half course
February 17, 2025: Family Day
March 31, 2025: Last day to drop a second term half course without penalty

Course Instructor	Contact Information	Office Hours
Jed Long	Jed.long@uwo.ca	See OWL

Teaching Assistant(s)	Contact Information	Office Hours
TBD	TBD	See OWL

☒ Office hours will be held in person

2. Calendar Description

Methods and techniques in Geographic Information Science. Spatial data encoding from maps and geographic database implementation. Spatial interpolation and other modeling techniques. Integration of remote sensing, GIS, and Visualization. Hands-on experience using ESRI ArcGIS software.
Online lectures, 2 laboratory hours, 0.5 course

Antirequisite(s): N/A

Prerequisite(s): Geography 2210A/B or Biology 2244A/B or Statistical Sciences 2244A/B; and Geography 2220A/B. Adequate mathematical background is needed to be successful
Prerequisite checking is the student's responsibility

Senate Regulations state, "unless you have either the requisites for this course or written special permission from your Dean to enroll in it, you will be removed from this course and it will be deleted from your record.

This decision may not be appealed. You will receive no adjustment to your fees in the event that you are dropped from a course for failing to have the necessary prerequisites."

3. Textbook

A textbook is not required but a good GIS textbook will be an invaluable resource for this course. The course readings relate to the textbook below, but other texts cover the same material.

"Required" Textbook:

Peter A. Burrough, Rachael A. McDonnell, and Christopher D. Lloyd, 2015, Principles of Geographical Information Systems (3rd Ed.). Oxford University Press. (ISBN: 9780198742845)

$91.99

Other Comparable GIS Textbooks

Longley, P.A., M.F.Goodchild, D.J.Maguire, and D.W.Rhind, 2016. Geographic Information Systems and Science (4th Ed.). John Wiley & Sons, Inc., 469 p. (978-1-119-03130-7 or ISBN : 978-1-118-67695-0).

Bolstad, Paul, 2016. GIS Fundamentals: A First Text on Geographic Information Systems (5th Ed.). XanEdu Publishing Inc., 770 p. (ISBN 1506695876 or 978-1506695877).
Chang, K.T., 2019. Introduction to Geographic Information Systems (9th Ed.). McGraw Hill, 448 p. (ISBN10: 1259929647 | ISBN13 9781259929649)

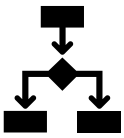
4. Course Objectives and Format

Course Objectives:

I. To gain new competencies for working with geographical data using GIS.
II. To become competent in vector and raster GIS analysis.
III. To improve cartographic and data visualization skills.
IV. To become confident in performing a variety of spatial analysis techniques.

Course Format:

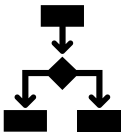
Lectures: In person lectures, online videos, live tutorials, and readings
Labs: 2 hrs (In person delivery, demonstration and supported work time).



Expectations:

- Engagement with lecture and lab material is imperative to success in this course.
- The course material is cumulative.
- You should review lectures and readings weekly.
- It is the student's responsibility to cover any material missed by failure to attend lectures, please also see all material on the course website.
- Students must be organized, especially with computer files, please seek help if you are struggling with this component.

All course material will be posted to the new OWL Brightspace learning environment: https://westernu.brightspace.com/d2l/home. Any changes will be indicated on the OWL site and discussed with the class.



Current versions of all popular browsers (e.g., Safari, Chrome, Edge, Firefox) are supported with OWL Brightspace; what is most important is that you update your browser frequently to ensure it is current. All JavaScript and cookies should be enabled.

If students need assistance, they can seek support on the OWL Brightspace Help page. Alternatively, they can contact the Western Technology Services Helpdesk. They can be contacted by phone at 519-661-3800 or ext. 83800.

5. Learning Outcomes

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

- Deal with various forms of geospatial data
- Understand projections and coordinate systems
- Perform vector and raster GIS analyses
- Make high quality and informative maps
- Apply different spatial analysis techniques
- Present GIS projects on the web using StoryMaps and ArcGIS Online

6. Course Content and Schedule

Week #	Week Of (Monday)	Weekly Lecture Themes (Chapter in Burrough Text)	Lab	Lab due (Friday)
Week 1	Jan 06	Course Introduction (Ch 1) Geospatial Data (Ch 2, 3)	Tutorial 1	
Week 2	Jan 13	Coordinate Systems (Ch 2) Vector Spatial Analysis (Ch 7)	Lab 1	
Week 3	Jan 20	Raster Spatial Analysis (Ch 10) Scale in GIS (throughout)	Lab 1	Lab 1
Week 4	Jan 27	Digital Elevation Models (Ch 11) Introduction to Term Project	Lab 2	
Week 5	Feb 03	Spatial Interpolation (Ch 8, 9) Spatial Pattern Analysis (Ch 6)	Lab 2	Lab 2
Week 6	Feb 10	Introductory MCE History of Maps and GIS (Ch 5)	Lab 3	
Week 7	**Feb 17**	**Reading week (no lecture)**	**No Lab**	
Week 8	Feb 24	Cartographic Principles (Ch 5) Story Maps	Lab 3	Lab 3
Week 9	Mar 03	Cost Distance and LCP Network Analysis	Lab 4	

Week #	Week Of (Monday)	Weekly Lecture Themes (Chapter in Burrough Text)	Lab	Lab due (Friday)
Week 10	Mar 10	GIS Work Flows GIS Programming	Lab 4	Lab 4
Week 11	Mar 17	GIScience Research @ Western	Lab 5	
Week 12	Mar 24	Term Project Help Session	Lab 5	Lab 5
Week 13	Mar 31	Exam Review Term Project Help Session	Project Help Session	

7. Communication

☒ Students should check the OWL site every 24 – 48 hours

☒ Students should post technical questions for instructor(s) and teaching assistant(s) using OWL Brightspace discussion forums.

☒ For any other communication, the centrally administered **e-mail account** provided to students will be considered the individual's official university e-mail address. It is the responsibility of the account holder to ensure that e-mail received from the University at his/her official university address is attended to in a timely manner. You can read about the privacy and security of the UWO email accounts here.

☒This course will use the OWL Brightspace for discussions

☒ Students should post all course-related content on the discussion forum so that everyone can access answers to questions

☒ The discussion forums will be monitored by instructors and teaching assistant

8. Evaluation

Assessment	Format	Weighting	Due
Tutorial 1	Revisiting ArcGIS software		NA
Lab 1	Mini GIS Project	10%	Jan 24
Lab 2	Multi-Criteria Evaluation (MCE) with GIS	10%	Feb 07
Lab 3	3D Building Model Generation from LiDAR data	10%	Feb 28
Lab 4	ArcGIS Model Builder and Finding the Least-cost Path	10%	Mar 14
Lab 5	Network Analysis	10%	Mar 28
Term Project	ArcGIS story map	25%	Apr 6
Final Exam	Take Home Exam	25%	TBD

The evaluation methods described in the course outline are essential requirements for the course.

Students are responsible for material covered in the lectures as well as the assigned chapters/sections in the text.

☒ All assignments are due on the due date at 11:55 pm EST unless otherwise specified, please see OWL for more information on assignment submissions and due dates.

☒ After an assessment is returned, students should wait 24 hours to digest feedback before contacting their evaluator; to ensure a timely response, reach out within 7 days

Information about late or missed evaluations:

☒ Late assessments without illness self-reports will be subject to a late penalty 10%/day

☒ Late assessments with illness self-reports or self reported absences (see below) are subject to an automatic extension of 5-days unless otherwise discussed with the instructor.

Click here for a detailed and comprehensive set of policies and regulations concerning examinations and grading. The table below outlines the University-wide grade descriptors.

A+	90-100	One could scarcely expect better from a student at this level
A	80-89	Superior work which is clearly above average
B	70-79	Good work, meeting all requirements, and eminently satisfactory
C	60-69	Competent work, meeting requirements
D	50-59	Fair work, minimally acceptable
F	below 50	Fail

Grades will not be adjusted on the basis of need. It is important to monitor your performance in the course. Remember: *You* are responsible for your grades in this course.

9. Accommodation Policies

Students with disabilities work with Accessible Education (formerly SSD) which provides recommendations for accommodation based on medical documentation or psychological and cognitive testing. The accommodation policy can be found here: Academic Accommodation for Students with Disabilities.

General Information about missed work:

University policy on academic considerations are described here. This policy requires that all requests for academic considerations must be accompanied by a self-attestation. Further information about academic considerations, and information about submitting this self-attestation with your academic consideration request may be found here.

Please note that any academic considerations granted in this course will be determined by the instructor, in consultation with the academic advisors in your Faculty of Registration, in accordance with information presented in this course outline.

Formal Documentation Designation statement:

Please note that the Term Project assessment is considered to be central to the learning objectives for this course. Accordingly, students seeking academic consideration for this assessment will be required to provide formal supporting documentation.

Dr Long's Flexible Assignment Policy:

Every student will be allowed to submit a lab late one time. You will have up to 5 days to get your assignment in late (until the following Wednesday). THERE IS NO NEED to email the instructor, the TA will identify this the first time you submit late. No questions will be asked. Any additional extensions or longer extensions will require formal academic consideration, otherwise late penalty will apply.

Absence from Course Commitments

Students must familiarize themselves with the Policy on Academic Consideration – Undergraduate Students in First Entry Programs

Students missing course work for medical, compassionate or extenuating circumstances can request academic consideration by completing a request at the central academic consideration portal. Students are permitted one academic consideration request per course per term without supporting documentation. Note that supporting documentation is **always** required for academic consideration requests for examinations scheduled by the office of the registrar (e.g. December and April exams) and for practical laboratory and performance tests typically schedule during the last week of the term. Students should also note that the instructor may designate one assessment per course per term that requires supporting documentation. This designated assessment is described elsewhere in this document. Please note that any academic considerations granted in this course will be determined by the instructor of this course, in consultation with the academic advisors in your Faculty of Registration, in accordance with information presented in this course outline. Supporting documentation for academic considerations for absences due to illness should use the Student Medical Certificate or, where that is not possible, equivalent documentation by a health care practitioner.

Accommodation for Religious Holidays

Students should review the policy for Accommodation for Religious Holidays. Where a student will be unable to write examinations and term tests due to a conflicting religious holiday, they should inform their instructors as soon as possible but not later than two weeks prior to writing the examination/term test. In the case of conflict with a midterm test, students should inform their instructor as soon as possible but not later than one week prior to the midterm.

10. Make-up Examinations

A Special Examination is any examination other than the regular examination, and it may be offered only with the permission of the Dean of the Faculty in which the student is registered, in consultation with the instructor and Department Chair. Permission to write a Special Examination may be given on the basis of compassionate or medical grounds with appropriate supporting documents.

The format and content of make-ups may differ substantially from the scheduled test or examination.

11. Use of Electronic Devices

The final exam will be take home and therefore electronic devices will be permitted.

12. How to Be Successful in this Class:

Students enrolled in this class should understand the level of autonomy and self-discipline required to be successful.

1. Invest in a planner or application to keep track of your courses. Populate all your deadlines at the start of the term and schedule time at the start of each week to get organized and manage your time.
2. Make it a daily habit to log onto OWL to ensure you have seen everything posted to help you succeed in this class.
3. Follow weekly checklists created on OWL or create your own to help you stay on track.
4. Take notes as you go through the lesson material. Keeping handwritten notes or even notes on a regular Word document will help you learn more effectively.
5. Connect with others. Try forming a study group and try meeting on a weekly basis for study and peer support.
6. Do not be afraid to ask questions. If you are struggling with a topic, check the online discussion boards or contact your instructor(s) and or teaching assistant(s).
7. Reward yourself for successes. It seems easier to motivate ourselves knowing that there is something waiting for us at the end of the task.

13. Academic Offences

Scholastic offences are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence.

14. Western's Commitment to Accessibility

The Department of Geography and Environment strives at all times to provide accessibility to all faculty, staff, students and visitors in a way that respects the dignity and independence of people with disabilities.

Please contact the course instructor if you require material in an alternate format or if you require any other arrangements to make this course more accessible to you. You may also wish to contact Services for Students with Disabilities (SSD) at 519-661-2147 for any specific question regarding an accommodation. Information regarding accommodation of exams is available on the Registrar's website.

More information about "Accessibility at Western" is available.

15. Mental Health

If you or someone you know is experiencing distress, there are several resources here at Western to assist you. Please visit Western's Health and Wellness website for more information on mental health resources.

16. Support Services

Western's Support Services
Student Development Centre

Western is committed to reducing incidents of gender-based and sexual violence and providing compassionate support to anyone who has gone through these traumatic events. If you have experienced sexual or gender-based violence (either recently or in the past), you will find

information about support services for survivors, including emergency contacts at https://www.uwo.ca/health/student_support/survivor_support/get-help.html.

To connect with a case manager or set up an appointment, please contact support@uwo.ca.

17. Important Dates

Monday January 6: Classes resume
Tuesday January 14: Last day to add a second term half course
Monday February 17: Family Day – Department Office Closed
February 17-23: Spring Reading Week (No classes; Department Office open)
Friday March 7: Last day to drop a second term half course
Friday April 4: Classes end
April 5 and 6: Study days
April 7-30: Examination Period