

Introduction to GIS

GEOG 2306(3)-001

Winter 2024 Course Outline

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Office Hours: T 13:30-14:30 or by appointment

Lab Date & Time: M: 2:30-4:20pm
W: 10:30-12:20pm
W: 2:30-4:20-pm

Course Date & Time: T/Th: 8:30-9:45 am
Course Location: 4CM13

Lab Location: 5L23

Semester Start Date: Monday, January 8, 2024
Semester End Date: Friday, April 5, 2024

Course Description and Objectives

This course provides a systematic overview of GIS methodology and theory covering the essential principles of data acquisition, input, manipulation, and output. The laboratory component of this course provides hands-on experience using industry software.

Geographic Information Systems (GIS) are used to encode, store, analyze, and report spatial data. They link different information technologies such as mapping and database management systems. They also provide a repository for spatial data, which can be constructed, maintained, edited, and analyzed. The ability to use spatial information facilitates management and decisions in a wide array of fields and GIS are increasingly being used for practical purposes. They include marketing, resource management, facility location, environmental impact assessment, urban planning, transportation, and tracking crime data, just to name a few.

Specific objectives include:

1. Providing basic GIS concepts.
2. Acquiring basic GIS application skills.
3. Understanding the fundamentals of GIS tasks such as digitizing, thematic mapping, database management and spatial analysis.
4. Familiarization with the ArcGIS software.

A geographic information system (GIS) integrates hardware, software, and data for capturing, managing, analyzing, and displaying all forms of geographically referenced information. GIS allows us to view, understand, question, interpret, and visualize data in many ways that reveal relationships, patterns, and trends in the form of maps, globes, reports, and charts. A GIS helps you answer questions and solve problems by looking at your data in a way that is quickly understood and easily shared. (Source: ESRI - <http://www.esri.com/what-is-gis/overview#overview> panel)

Student Evaluation and Grading

The course is broken down into two major components. A theoretical component which comprises classroom materials and their associated tests and exams (60% of course grade) and an applied component represented by the laboratory assignments and exam (40% of course grade).

Component	Date (Due)	Percent of Final Grade
Mid-Term Exam	Thursday, February 15, 2024	25
Final Exam	T.B.D	35
Lab Assignments	As stated in lab assignment	25
Lab Exam	Week of March 25, 2024 in lab.	15

*Dates and times are subject to change. Where a discrepancy exists the official university final exam schedule will supersede the above date (<http://www.uwinnipeg.ca/exam-schedules/>)

The following grade distribution by letter grade will be used for this class.

Grade	A+	A	A-	B+	B	C+	C	D	F
%	100-95	95-88	88-80	79-76	75-70	69-66	65-60	59-50	<50

The numeric boundaries separating letter grades may be altered at the request of the Department Review Committee or by the University Senate.

Significant Dates

- Winter Reading Week **February 18-24, 2024**
- Final Date to Withdraw without Academic Penalty **March 15, 2024**
- Good Friday (University Closed) **Friday, March 29, 2024**
- Exam Period **April 11-24, 2024**

Course Textbook and Resources

There is no specific course textbook, however, any materials posted to NEXUS or referenced within the lecture are considered testable materials for the exams.

Course Organization

The following course organization outlines the topics of discussion during lectures. The order, dates, and proposed content of the presentations are subject to change as circumstances dictate. We may also not be able to cover the entire curriculum due to the interest of the class in examining in more detail some of the topics compared to others.

Week Of	Date	Topic	Lab Assignment
Jan 8 (1)	Tuesday Thursday	Course Overview, Objectives Introduction to GIS	
Jan 15 (2)	Tuesday Thursday	Data Models	Lab #1 – Intro to ArcGIS Pro
Jan 22 (3)	Tuesday Thursday	Geodesy, Datums, Projections and Coordinate Systems	Lab #2 – Finding Data and Styles
Jan 29 (4)	Tuesday Thursday	Maps, Data Entry, Editing and Output	Lab#3 – Spatial Analysis
Feb 05 (5)	Tuesday Thursday	Data Sources, Attributes, and Tables	Lab #4 – Raster Analysis
Feb 12 (6)	Tuesday Thursday	Mid-Term Exam Review Mid-Term Exam	Lab #5 – DEM and Stream Networks
Feb 19 (7)	Tuesday Thursday	Reading Week – No Classes	
Feb 26 (8)	Tuesday Thursday	Basic Spatial Analysis	Lab #6 – Point Clouds, LiDAR
Mar 4 (9)	Tuesday Thursday	Basic Raster Analysis	Lab #7 – Network Analysis
Mar 11 (10)	Tuesday Thursday	Terrain and Surface Analysis	Lab #8 – Model Builder
Mar 18 (11)	Tuesday Thursday	Spatial Models and Modeling	Study Week
Mar 25 (12)	Tuesday Thursday	Data Standards and Quality	Lab Exam
April 1 (13)	Tuesday Thursday	New Developments Final Exam Review	

Course Rules and Guidelines

1. A permitted or necessary change in mode of delivery may require adjustments to important aspects of course outlines, like class schedule and the number, nature, and weighting of assignments and/or exams.
2. Students can find answers to updates and frequently asked questions related to COVID-19 here: <https://www.uwinnipeg.ca/covid-19/index.html> .
3. When it is necessary to **cancel a class** due to exceptional circumstances, I will make every effort to inform students via **uwinnipeg** email (and NEXUS), as well as the Departmental Assistant and Chair/Dean so that class cancellation forms can be posted outside classrooms.
4. Please note that **withdrawing** before the VW date does not necessarily result in a fee refund.
5. Students with documented disabilities, temporary or chronic medical conditions, requiring **academic accommodations** for tests/exams or during lectures/laboratories are encouraged to contact Accessibility Services (AS) at 204.786.9771 or <https://www.uwinnipeg.ca/accessibility-services/> to discuss appropriate options. All information about a student's disability or medical condition remains confidential.
6. Reference to the appropriate items in the Regulations & Policies section of the Course Calendar, including Senate **appeals and academic misconduct** (e.g. plagiarism, cheating) <https://www.uwinnipeg.ca/academics/calendar/docs/regulationsandpolicies.pdf> Instructors should become familiar with the procedures for dealing with alleged academic misconduct at <https://www.uwinnipeg.ca/institutional-analysis/docs/policies/academic-misconduct-procedures.pdf>
7. **Avoiding Academic and Non-academic Misconduct.** Students are encouraged to familiarize themselves with the Regulations and Policies found in the University Academic Calendar at <https://www.uwinnipeg.ca/academics/calendar/docs/regulationsandpolicies.pdf> . Particular attention should be given to subsections 8 (Student Discipline), 9 (Senate Appeals), and 10 (Grade Appeals).

It cannot be stressed enough the importance of maintaining academic integrity and the potential consequences or engaging in plagiarism, cheating and other forms can be quite severe. Even unintentional plagiarism, as described in the UW Library video tutorial "Avoiding Plagiarism" (<https://www.youtube.com/watch?v=UvFdxRU9a8g>), is a form of academic misconduct.

Similarly, uploading essays and other assignments to essay vendor or trader sites (filesharing sites that are known providers of essays for use by others who submit them to instructors as their own work) is a form of misconduct, as it involves aiding and abetting plagiarism.

Important information is outlined in the Academic Misconduct Policy and Procedures:

<https://www.uwinnipeg.ca/institutional-analysis/docs/policies/academic-misconduct-policy.pdf> and <https://www.uwinnipeg.ca/institutional-analysis/docs/policies/academic-misconduct-procedures.pdf>.

8. **Privacy.** Students should be reminded of their rights in relation to the collecting of personal data by the University (<https://www.uwinnipeg.ca/privacy/admissions-privacy-notice.html>), especially if Zoom (or equivalent) is being used for remote teaching (<https://www.uwinnipeg.ca/privacy/zoom-privacy-notice.html>) and testing/proctoring (<https://www.uwinnipeg.ca/privacy/zoom-test-and-exam-proctoring.html>).

9. **Misuse of Filesharing Sites.** Uploading essays and other assignments to essay vendor or trader sites (filesharing sites that are known providers of essays for use by others who submit them to instructors as their own work) involves “aiding and abetting” plagiarism. Students who do this can be charged with Academic Misconduct.
10. **Avoiding Copyright Violation.** Course materials are owned by the instructor who developed them. Examples of such materials are course outlines, assignment descriptions, lecture notes, test questions, and presentation slides. Students who upload these materials to filesharing sites, or in any other way share these materials with others outside the class without prior permission of the instructor/presenter, are in violation of copyright law and University policy. Students must also seek prior permission of the instructor /presenter before photographing or recording slides, presentations, lectures, and notes on the board.
11. **Academic Integrity and AI Text-generating Tools** Students must follow principles of academic integrity (e.g., honesty, respect, fairness, and responsibility) in their use of material obtained through AI text-generating tools (e.g., ChatGPT, Bing, Notion AI). If an instructor prohibits the use of AI tools in a course, students may face an allegation of academic misconduct if using them to do assignments. If AI tools are permitted, students must cite them. According to the MLA (<https://style.mla.org/citing-generative-ai/>), “you should (1). cite a generative AI tool whenever you paraphrase, quote, or incorporate into your own work any content (whether text, image, data, or other) that was created by it; (2). acknowledge all functional uses of the tool (like editing your prose or translating words) in a note, your text, or another suitable location; and (3). take care to vet the secondary sources it cites”. If students aren’t sure whether or not they can use AI tools, they should ask their professors.
12. **Research Ethics.** Students conducting research interviews, focus groups, surveys, or any other method of collecting data from any person, including a family member, must obtain research ethics approval before commencing data collection. Exceptions are research activities done in class as a learning exercise. For submission requirements and deadlines, see <http://www.uwinnipeg.ca/research/human-ethics.html> .
13. **Respectful Working and Learning Environment Policy.** Students are expected to conduct themselves in a respectful manner on campus and in the learning environment irrespective of platform being used. Behaviour, communication, or acts that are inconsistent with several UW policies could be considered non-academic misconduct. See the Respectful Working and Learning Environment Policy (<https://www.uwinnipeg.ca/respect/respect-policy.html>) and Acceptable Use of Information Technology Policy (<https://www.uwinnipeg.ca/institutional-analysis/docs/policies/acceptable-use-of-information-technology-policy.pdf>). More detailed information is outlined in the Non-Academic Misconduct Policy and Procedures (<https://www.uwinnipeg.ca/institutional-analysis/docs/student-non-academic-misconduct-policy.pdf> and <https://www.uwinnipeg.ca/institutional-analysis/docs/student-non-academic-misconduct-procedures.pdf>).
14. **Indigenous students** seeking additional supports, academic or other, are encouraged to contact the Aboriginal Student Services Centre (ASSC). The ASSC offers a variety of support services, and was created to maintain a safe, educational and culturally sensitive environment for all Aboriginal students (First Nation, Metis and Inuit) as they pursue their academic studies at The University of Winnipeg. More information can be found at: <http://www.uwinnipeg.ca/assc/> .

15. **Exam/Test Policies:** As a result of on-line instruction, students may be asked to turn on their camera and show their face alongside their university ID to prove their identity. If exams are in person, students will be required to show their University Issued ID.
16. **Missed Test/Exam Policy:** There are six acceptable excuses for an individual missing an exam or test. They are:
- Illness:** I will need an official certificate from your doctor verifying that you have a medical condition that precluded you from writing the schedule exam/test. **The note must indicate either the day(s) you were unable to attend class and/or the return to work/school date, not simply the day you were seen by the medical practitioner.** You will also be required, within reason, to notify the instructor as early as possible prior to, or immediately after the scheduled date. An email will suffice.
 - Funeral Attendance:** I will need proof of funeral attendance with the date of the ceremony clearly listed.
 - Mandatory Courtroom Appearance:** I will need a copy of your official court summons with the date of attendance clearly listed.
 - Athletic Participation and other Approved University Activities:** I will need a signed letter from a member of the senior coaching staff, program director, instructor, or other supervisory individuals indicating the day(s) you will be absent.
 - Inclement Weather:** Bad weather happens, if you are held up because of poor travel conditions contact the instructor as soon as possible to make alternate arrangements. In this situation the test/exam will be made-up later the same day or the following day, whenever possible.
 - Religious Holiday:** Students may choose not to attend classes or write examinations on holy days of their religion, but they must notify their instructors at least two weeks in advance. Instructors will then provide opportunity for students to make up work examinations without penalty. A list of religious holidays can be found in the Undergraduate Academic Calendar.
<http://uwinnipeg.ca/academics/calendar/docs/important-notes.pdf>.
17. In all situations, the makeup test/exam will occur **within 5 school days** of the missed date. In the event of illness this deadline will be **within 5 school days** from the “**return to work**” date noted on the medical certificate. It is the student’s responsibility to schedule the makeup exam. Failure to schedule within the defined timeline will result in a grade of zero (0) for that test/exam.
18. **Final Exam Deferrals:** A legitimate exam conflict is defined as two (2) exams scheduled at the same time. You need to identify early any conflicts that may exist. Conflicts should attempt to be resolved by the student and the instructor(s), if a resolution cannot be reached students must submit the appropriate formal appeal (<http://www.uwinnipeg.ca/index/exam-conflict>). It is the student's responsibility to initiate the resolution of any conflicts. **Personal conflicts such as travel plans, and work schedules do not warrant a change in examination times. The date, time and location of the final exam are contained in this syllabus.**
19. **Late Penalties:** Assignments submitted late (and without a valid excuse) will be assessed a late penalty of 10%/day reduction in grade to a maximum of a 50% reduction whereby the assignment will be awarded a grade of zero (0).

20. **Course Communication:** Students are reminded that only their University of Winnipeg email address will be used for course related correspondence or through the email system on NEXUS. **The instructor will not respond to messages that do not originate from either of these sources.** Students have the responsibility to regularly check their UWinnipeg e-mail addresses to ensure timely receipt of correspondence from the University and/or their course instructors.

21. **Make-Up or Bonus Work:** There will be NO make-up work or bonus material of any kind.

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The information presented in this course is the intellectual property of the instructor(s) and is presented for the benefit of registered students only. Any audio, video, or virtual reproduction of the lectures or labs, either in whole or in part, without the express written consent of the instructor(s) is strictly prohibited. In the event of extenuating circumstances, I reserve the right to make changes to any information presented in this document, after consulting with, or with the approval of, the class. Changes in test dates require the unanimous approval of those who were in attendance in class when the changes were discussed.