SYLLABUS

GEOG 5212: Geospatial Databases for GIS

SPRING 2026

COURSE OVERVIEW

- **Course times and location:**
  - Lecture: Weekly Online Asynchronous
  - Lab: Thursdays, 12:45 PM – 2:05 PM, Derby Hall 0135

Instructor

- **Name:** Dr. Chayanika Singh, GISP
- **Credentials:** PhD, Geographic information Sciences, Texas State University 2022
- **Email:** singh.1883@osu.edu
- **Office location:** 1123 Derby Hall
- **Office hours:** Zoom by appointment
- **Preferred means of communication:**
  - My preferred method of communication for questions is **email.** Please have the email subject as "**Geog 5212_xxx",** to make sure it gets my attention.
  - My class-wide communications will be sent through the Announcements tool in Carmen Canvas. Please check your notification preferences (go.osu.edu/canvas-notifications) to be sure you receive these messages.

Teaching Assistant

- **Name:** Zhanassyl Teleubay
- **Email:** teleubay.1@osu.edu
- **Office location:** 1070 Derby Hall
- **Office hours:** Monday, 1:00-2:00 PM — In person, and Wednesday, 1:00-2:00 PM — Online via Zoom

Course Description

This course focuses on designing, implementing, querying, and managing geospatial databases or persistent data stores where most entities have footprints in geographic space and time. This is critical for designing and implementing GIS for projects and organizations. It is also crucial for moving beyond GIS to the bigger world of geographic information services.

In designing any GIS project, a fundamental decision is how to represent the world of interest in the computer. This is critical since no GIS or spatial analysis tools – no matter how powerful – can extract more information than is designed in the database representation. The growing size of geospatial databases requires these databases to support efficient querying and searching. A well-designed spatial database can also evolve as the questions in the project or organization change over time. A poorly designed spatial database is difficult to rewind and fix.

Understanding spatial database design and management is not only essential for designing and implementing GIS, but also to support a much wider range of geographic information services such as Google Maps and location-based services such as the location apps on your smartphone. This is a much bigger market than the market for professional GIS service.

Database technologies. The most common spatial database management system (SDBMS) technology is a specialized object-relational database management system (ORDBMS). An ORDBMS supports objects within a relational (table-based) database and its associated query language, Structured Query Language (SQL). An ORDBMS is a SDBMS if it also supports spatial objects through spatial indexing and spatial (geometric) operations.

ORDBMS with spatial objects is the approach used by ESRI's Geodatabase as well as open-source software such as PostgreSQL/PostGIS. It is also supported by other major vendors such as IBM.

In this course, we will be working with ESRI's ArcGIS Geodatabase and PostGreSQL/PostGIS. There will be a series of assignments using these technologies. These will be provided via the course website and discussed in lectures. q

Prerequisites: GEOG 5210 and CSE 1114, or consent of instructor.

Learning Outcomes

By the end of this course, students should successfully be able to:

- Understand database design with spatial objects.
- Write spatial queries.
- Understand physical data storage and performance tuning.
- Have hands-on skills to create a working GIS database.

HOW DOES THIS COURSE WORK

Mode of delivery:

Lectures: (online Asynchronous)

- Please note that all lecture material will be delivered ***online asynchronously,*** meaning that *there are no required sessions when you must be logged in to Carmen at a scheduled time.* Lectures are pre-recorded, and you will be provided with a link to each week's lecture's video on Carmen Canvas webpage, which you can view anytime during the week that the lecture is assigned.
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Labs: (In-person 12:45 pm – 2:05 pm DB 0135) except for online MGIST students

- Please note that **In-person attendance at labs is strongly recommended**. However, if you are unable to attend due to COVID-19 or some other reasons, please let the lab TA know as soon as possible and we will make special arrangements as per lab policies. All lab related material will be available on canvas lab page.
- **Attendance in labs meetings have assigned point weightage** towards the final grade as **extra credits**. Contact your lab TA for detail lab policies.

Important: Do not expect to complete entire lab assignments during the scheduled lab time. Lab sessions are 80 minutes, and it usually takes longer than 80 minutes to complete a lab. Therefore, you will need to either 1) finish the lab using software installed on your own computer or 2) return to the computer lab when it is not being used for other classes.

Pace of online lecture activities: This course is divided into **weekly modules** that are released at the beginning of the week. Students are expected to keep pace with weekly deadlines but may schedule their efforts freely within that time frame.

Credit hours and work expectations: This is a **3-credit-hour course**. According to Ohio State policy, students should expect around 3 hours per week of time spent on direct instruction (instructor content and Carmen activities, for example) in addition to 6 hours of homework (reading and assignment preparation, for example) to receive a grade of (C) average.

Participation requirements: The following is a summary of everyone's expected participation:

Participating in online activities: **AT LEAST ONCE PER WEEK**

Be sure you are logging in to the course in Carmen each week, including weeks with holidays or weeks with minimal online course activity. (During most weeks you will probably log in many times.) If you have a situation that might cause you to miss an entire week of class, discuss it with me *as soon as possible.*

Course Materials and Technologies

Textbook:

No specific textbook is required for this course. There will be several references given to you from various web sources (such as YouTube links, tutorials, podcasts... etc) to expand your learnings of different topics covered but not extensively described in this course.

Other Readings: Excerpts from the following texts will be provided in digital (PDF) format on Carmen:

- **B**: Bolstad, P. (2019). *GIS Fundamentals*, 6th edition.
- **CM**: Coronel, C. & Morris, S. (2016). *Database Systems: Design, Implementation, and Management*, 12th edition.
- **EN**: Elmasri, R. & Navathe, S. (2016). *Fundamentals of Database Systems*, 7th edition.
- **N**: Nasser, H. (2014). *Learning ArcGIS Geodatabases*.
- **OH**: Obe, R. & Hsu, L. (2015). *PostGIS in Action,* 2nd edition.
- **R+**: Rigaux, P., Scholl, M., & Voisard, A. (2002). *Spatial Databases with Application to GIS*.
- **RG**: Ramakrishnan, R. & Gehrke, J. (1999) *Database Management Systems*, 2nd edition.
- **SC**: Shekhar, S. & Chawla, S. (2003) *Spatial Databases: A Tour*.
- **WD**: Worboys, M. & Duckham, M. (2004) *GIS: A Computing Perspective*, 2nd edition.
- **Z**: Zeiler, M. (2010) *Modeling Our World: The ESRI Guide to Geodatabase Concepts*, 2nd edition.

Data Storage: A portable memory device (with 16GB or larger) or access to cloud drive (Box, OneDrive, Dropbox etc.) is needed for data storage.

Course technology

For help with your password, university email, Carmen, or any other technology issues, questions, or requests, contact the Ohio State IT Service Desk. Standard support hours are available at ocio.osu.edu/help/hours, and support for urgent issues is available 24/7.

- **Self-Service and Chat support:** ocio.osu.edu/help
- **Phone:** 614-688-4357(HELP)
- **Email:** servicedesk@osu.edu
- **TDD:** 614-688-8743

Baseline technical skills for online courses

- Basic computer and web-browsing skills

- Navigating Carmen: for questions about specific functionality, see the Canvas Student Guide.

Required Technology skills specific to this course

CarmenZoom virtual meetings

- Recording a slide presentation with audio narration
- Recording, editing, and uploading video

Required equipment

Computer: current Mac (OS X) or PC (Windows 7+) with high-speed internet connection

Webcam: built-in or external webcam, fully installed and tested

Microphone: built-in laptop or tablet mic or external microphone

Other: a mobile device (smartphone or tablet) or landline to use for BuckeyePass authentication

Required Software

- **Microsoft Office 365:** All Ohio State students are now eligible for free Microsoft Office 365 ProPlus through Microsoft's Student Advantage program. Full instructions for downloading and installation can be found at go.osu.edu/office365help.
- **ArcGIS Online:** students will be provideded access to ArcGIS Online for exercises and projects. More details can be found at https://cura.osu.edu/esri#arcgis-online. This is provided through ESRI's Education Site License Program and you may review ESRI's privacy policies at https://www.esri.com/en-us/privacy/overview. For information about accessibility, visit Accessibility in ArcGIS Pro.
- **OpenOffice** is a free and complete suite of software tools for word processing, spreadsheet, and presentations. View their privacy statement at https://www.openoffice.org/privacy.html.
- **QGIS**
    - This is the leading open-source desktop GIS software that is available free-of-cost. You can download the software from here: https://qgis.org/en/site/forusers/download.html.
    - Q: What version of QGIS should I have? A: I recommend the "Long term release repository (most stable)" and "QGIS Standalone Installer". Specifically, I'll be using version 3.16 this semester. Other versions should work just fine, but you may notice differences between the lab instructions and what you see on your screen.
    - TECHNICAL SUPPORT: Successful download and installation of QGIS is ultimately the student's responsibility. You may contact your instructor/TA with

installation-related questions, but we cannot guarantee that we'll be able to resolve all issues.

- **PostgreSQL, PostGIS, and pgAdmin**
  - PostgreSQL, also known as Postgres, is a free and open-source relational database management system emphasizing extensibility and SQL compliance. PostGIS adds support for geographic objects to the PostgreSQL object-relational database. pgAdmin is a management tool for PostgreSQL.
  - You can download the installer for PostgreSQL from this site: https://www.postgresql.org/download.
  - The installation of PostgreSQL includes pgAdmin, and it is during the final step of installing PostgreSQL that you have the option to install additional packages as well. You want to do this, because this is when you'll have the opportunity to select PostGIS, which will then be installed.
  - Additionally, **remember to record the passwords** that you create during the installation process. You'll need this information.
  - TECHNICAL SUPPORT: Successful download and installation of PostgreSQL, PostGIS, and pgAdmin is ultimately the student's responsibility. You may contact your instructor/TA with installation-related questions, but we cannot guarantee that we'll be able to resolve all issues.

Have Question regarding software installation?

- **Post your questions in the Software Installation Q&A discussion board BEFORE reaching out to the other technical support resources provided.**
- There are many installation-related questions that we can answer because they are common. We may have heard them in past semesters and already know how to respond. Be sure to include us on your email communication with technical support so that we can better understand your problem and help others experiencing the same.

Carmen access

You will need to use BuckeyePass multi-factor authentication to access your courses in Carmen. To ensure that you are able to connect to Carmen at all times, it is recommended that you take the following steps:

Register multiple devices in case something happens to your primary device. Visit the BuckeyePass - Adding a Device help article for step-by-step instructions.

- Download the Duo Mobile application to all of your registered devices for the ability to generate one-time codes in the event that you lose cell, data, or Wi-Fi service.

If none of these options will meet the needs of your situation, you can contact the IT Service Desk at 614-688-4357 (HELP) and IT support staff will work out a solution with you.

Grading and Faculty Response

Your Grades will be calculated based on the following assignment weightage.

Assignment Category	Points
Syllabus Quiz + Lab 0	1%
Labs (10)	50%
Quizzes (9)	9%
Project	20%
Exam	20%
Total	**100%**
Attendance (extra credits)	5%

Descriptions of Major Course Assignments

Syllabus Quiz & Lab 0: The first week will provide you a detailed explanation of course expectations, policies, deliverables, schedule of classes etc. You are expected to read the syllabus and get familiar with all the requirements in this course. It is highly encouraged to be prepared to ask questions about course content in the very first week. There will be an online syllabus quiz to be taken during the first week to make sure you know the syllabus.

Lab 0 will provide instructions for getting started with several required software installation and basic skills. More information will be provided in the first week's lab session.

Labs: There will be 10 labs (1 to 10) to do hands on practice. You will be provided with data and step-by-step instructions for each lab, but keep in mind that the process of completing any given lab may not go as smoothly as planned. Unexpected challenges may arise, so it is best to plan for this. Set a goal to submit each lab in advance of the deadline. That way, if unexpected challenges do arise, you have time to deal with them before the deadline passes.

Labs are submitted in a quiz-like format. You are given all the questions in advance, at the end of the lab instructions. When you are ready to submit your lab, you open the lab assignment, enter your answers, upload any required files, and click Submit.

Lab questions: If you have any questions on lab contents and/or grades (can't finish specific steps, tools are not working, etc.), **please contact your TA via email and/ or visit TA's office hours.**

Project: You would need to create a final project to showcase your skills learnt in lab and knowledge acquired from the lectures. You can choose **ANY topic of your own interest** and collect data to create a working spatial database. Deliverable will include a proposal, a presentation, peer reviews and a report. More information will be provided later via carmen.

Quizzes & Exams: There will be **9 non-cumulative**, open-book **quizzes** based on a weekly topic covered in lectures. They will contain multiple choices and blank filling questions. Additionally, there will be one **final exam** based on all the topics discussed in the lecture. You must take all the quizzes & exams to receive credits.
Each quiz and exam will be:

- *Online.* administered using course canvas website.
- *Timed.* If you are registered with SLDS for extended time accommodations, please confirm that extended time has been granted before you begin the exam.
- *Open note.* This means that you can use the lecture slides, the handouts, your notes, the textbook, etc.
- *Completed independently.* You should complete the exam by yourself. Collaboration with one or more other persons will be considered academic misconduct.
- *Allowed only one attempt.* Be sure that you are ready to complete the exam in one sitting before you begin.

No make-up exams will be given unless legitimate documents for medical or personal emergency are presented in advance. Exam must be taken at the scheduled time unless you have informed your instructor *before* the exam with proper reasons and documents and got approved by the instructor. **Please contact your instructor in advance of the scheduled exam to schedule a make-up exam**, except in the case of emergency. Make-up exams for excused absences will not be penalized. Make-up exams for unexcused absences will be penalized 15%.

Do your best to ensure that you have a reliable internet connection and a reliable device (desktop, laptop, tablet, or phone) for accessing the exam *before* you get started. If you do completely lose access, cannot resume, and the exam submits before you can reestablish connection and submit answers, be sure to let me know. There may not be much that I can do, in the interest of fairness to all students, but I certainly want to hear about the situation to investigate it, etc.

Late assignments

Please refer to Carmen course website for due dates of assignments. Assignments will be penalized **10% for each day late**. Thus, **assignments submitted 10 days after the deadline will be graded 0**. Extensions will not be granted due to lost work; be sure you back up and keep all your work. In case of unavoidable emergencies (for ex: health concerns or conference attendance) you must notify your instructor and request for permission to submit a late assignment.

Attendance

Attendance (in labs) will be recorded. Presence during classes help students to understand and work in a coherent way. Our prior experience shows that those students who regularly show up in classes learn more from their peers and instructors than those who prefer to work/study on their own (skipping class attendance). To encourage class presence and productivity, **attendance is made worth up to 5% of EXTRA CREDITS** counted towards the final grades in this course. However, 2 unexcused absences are allowed to cover any emergency or unexpected event that may prevent you coming to the labs. In case of any health emergency such as COVID19 related absences, please make sure to inform your Lab TA and me as soon as possible to get special arrangements as per policies. Documented proof may be required to get your attendance excused.

Grading scale

93–100: A
90–92.9: A-
87–89.9: B+
83–86.9: B
80–82.9: B-
77–79.9: C+
73–76.9: C
70 –72.9: C-
67 –69.9: D+
60 –66.9: D
Below 60: E

Instructor feedback and response time

I am providing the following list to give you an idea of my intended availability throughout the course. (Remember that you can call **614-688-HELP** at any time if you have a technical problem.)

- **Grading and feedback:** For large weekly assignments, you can generally expect feedback within **7 days after the assignment is closed.**
- **Email:** I will reply to emails within **48 hours** on days on school days. Feel free to send follow up email after 2 days of no response.
- **Discussion board:** I will check and reply to messages in the discussion boards Twice a week on school days.

Other Course Policies

Discussion and communication guidelines

Above all, please remember to be respectful and thoughtful.

- **Writing style**: While there is no need to participate in class discussions as if you were writing a research paper, you should remember to write using good grammar, spelling, and punctuation. A more conversational tone is fine for non-academic topics.
- **Tone and civility**: Let's maintain a supportive learning community where everyone feels safe and where people can disagree amicably. Remember that sarcasm doesn't always come across online.
- **Citing your sources**: When we have academic discussions, please cite your sources to back up what you say. For the textbook or other course materials, list at least the title and page numbers. For online sources, include a link.
- **Backing up your work**: Consider composing your academic posts in a word processor, where you can save your work, and then copying into the Carmen discussion.

Academic integrity policy for this course

- **Quizzes and exams**: You must complete the quizzes yourself, without any external help or communication.
- **Written assignments**: Your written assignments, including discussion posts, should be your own original work. In formal assignments, you should follow Chicago style to cite the ideas and words of your research sources. You are encouraged to ask a trusted person to proofread your assignments before you turn them in--but no one else should revise or rewrite your work.
- **Reusing past work**: In general, you are **prohibited** in university courses from turning in work from a past class to your current class, even if you modify it. If you want to build on past research or revisit a topic you've explored in previous courses, please discuss the situation with me.
- **Falsifying research or results**: All research you will conduct in this course is intended to be a learning experience; you should never feel tempted to make your results or your library research look more successful than it was.

Collaboration and informal peer-review: The course includes many opportunities for formal collaboration with your classmates. While study groups and peer-review of major written projects is encouraged, remember that **comparing answers on a quiz or assignment is not permitted**. If you're unsure about a particular situation, please feel free just to ask ahead of time.

GENERATIVE ARTIFICIAL INTELLIGENCE TOOLS

Given that the learning goals of this class include getting yourself familiar with Web and tools available on web, in this course, students are **welcome to explore innovative tools and technologies including generative artificial intelligence (GenAI)**. Students are permitted to use GenAI tools for most course assignments, except for **the final project assignments and reading reflections**. Your written assignments, including **discussion posts or essays**, should be your own original work.

If I suspect that you have used GenAI on an assignment for which it is prohibited, I will ask you to explain your process for completing the assignment in question. Submission of GenAI-generated content as your own original work is considered a violation of Ohio State's Academic Integrity policy and Code of Student Conduct because the work is not your own. The unauthorized use of GenAI tools will result in referral to the Committee on Academic Misconduct.

OHIO STATE'S ACADEMIC INTEGRITY POLICY

Academic integrity is essential to maintaining an environment that fosters excellence in teaching, research, and other educational and scholarly activities. Thus, The Ohio State University and the Committee on Academic Misconduct (COAM) expect that all students have read and understand the university's *Code of Student Conduct*, and that all students will complete all academic and scholarly assignments with fairness and honesty. Students must recognize that failure to follow the rules and guidelines established in the university's *Code of Student Conduct* and this syllabus may constitute "Academic Misconduct."

The Ohio State University's *Code of Student Conduct* (Section 3335-23-04) defines academic misconduct as: "Any activity that tends to compromise the academic integrity of the university or subvert the educational process." Examples of academic misconduct include (but are not limited to) plagiarism, collusion (unauthorized collaboration), copying the work of another student, and possession of unauthorized materials during an examination. Ignorance of the university's *Code of Student Conduct* is never considered an excuse for academic misconduct, so I recommend that you review the *Code of Student Conduct* and, specifically, the sections dealing with academic misconduct.

If I suspect that a student has committed academic misconduct in this course, I am obligated by university rules to report my suspicions to the Committee on Academic Misconduct.

If COAM determines that you have violated the university's *Code of Student Conduct* (i.e., committed academic misconduct), the sanctions for the misconduct could include a failing grade in this course and suspension or dismissal from the university.

If you have any questions about the above policy or what constitutes academic misconduct in this course, please contact me.

Other sources of information on academic misconduct (integrity) to which you can refer include:

- The Committee on Academic Misconduct web pages (COAM Home)
- *Ten Suggestions for Preserving Academic Integrity (Ten Suggestions)*
- *Eight Cardinal Rules of Academic Integrity* (www.northwestern.edu/uacc/8cards.htm)

Copyright disclaimer

The materials used in connection with this course may be subject to copyright protection and are only for the use of students officially enrolled in the course for the educational purposes associated with the course. Copyright law must be considered before copying, retaining, or disseminating materials outside of the course.

Statement on Title IX

All students and employees at Ohio State have the right to work and learn in an environment free from harassment and discrimination based on sex or gender, and the university can arrange interim measures, provide support resources, and explain investigation options, including referral to confidential resources.

If you or someone you know has been harassed or discriminated against based on your sex or gender, including sexual harassment, sexual assault, relationship violence, stalking, or sexual exploitation, you may find information about your rights and options at titleix.osu.edu or by contacting the Ohio State Title IX Coordinator at titleix@osu.edu. Title IX is part of the Office of Institutional Equity (OIE) at Ohio State, which responds to all bias-motivated incidents of harassment and discrimination, such as race, religion, national origin and disability. For more information on OIE, visit equity.osu.edu or email equity@osu.edu.

Intellectual Diversity

Ohio State is committed to fostering a culture of open inquiry and intellectual diversity within the classroom. This course will cover a range of information and may include discussions or debates about controversial issues, beliefs, or policies. Any such discussions and debates are intended to support understanding of the approved curriculum and relevant course objectives rather than promote any specific point of view. Students will be assessed on principles applicable to the field of study and the content covered in the course. Preparing students for citizenship includes helping them develop critical thinking skills that will allow them to reach their own conclusions regarding complex or controversial matters.

Grievances and Solving Problems

A student who encounters a problem related to his/her educational program has a variety of avenues available to seek resolution. (Note: the procedures for grade grievances are explicitly covered in the faculty rules) Typically, a student is advised to resolve any dispute, disagreement, or grievance as directly as possible, engaging with the person or persons most closely involved. The faculty and staff of the departments and colleges are available to work with students in this regard. If this step does not produce acceptable results, the student should follow a logical stepwise progression to address the academic concerns.

According to University Policies, if you have a problem with this class, you should seek to resolve the grievance concerning a grade or academic practice by speaking first with the instructor or professor. Then, if necessary, take your case to the department chairperson, college dean or associate dean, and to the provost, in that order. Specific procedures are outlined in Faculty Rule 3335-8-23. Grievances against graduate, research, and teaching assistants should be submitted first to the supervising instructor, then to the chairperson of the assistant's department.

Your mental health

As a student you may experience a range of issues that can cause barriers to learning, such as strained relationships, increased anxiety, alcohol/drug problems, feeling down, difficulty concentrating and/or lack of motivation. These mental health concerns or stressful events may lead to diminished academic performance or reduce a student's ability to participate in daily activities. The Ohio State University offers services to assist you with addressing these and other concerns you may be experiencing. If you find yourself feeling isolated, anxious or overwhelmed, please know that there are resources to help: ccs.osu.edu. You can reach an on-call counselor when CCS is closed at (614) 292-5766 and 24 hour emergency help is also available through the 24/7 National Prevention Hotline at 1-(800)-273-TALK or at suicidepreventionlifeline.org. The Ohio State Wellness app is also a great resource available at go.osu.edu/wellnessapp.

Religious accommodations

Ohio State has had a longstanding practice of making reasonable academic accommodations for students' religious beliefs and practices in accordance with applicable law.

Students must be in early communication with their instructors regarding any known accommodation requests for religious beliefs and practices, providing notice of specific dates for which they request alternative accommodations within 14 days after the first instructional day of the course.

With sufficient notice, instructors will provide students with reasonable alternative accommodations with regard to examinations and other academic requirements with respect to students' sincerely held religious beliefs and practices by allowing up to three absences each semester for the student to attend or participate in religious activities. Examples of religious accommodations can include, but are not limited to, rescheduling an exam, altering the time of a student's presentation, allowing make-up assignments to substitute for missed class work, or flexibility in due dates or research responsibilities.

If students have questions or disputes related to academic accommodations, they should contact their course instructor, and then their department or college office. For questions or to report discrimination or harassment based on religion, individuals should contact the Civil Rights Compliance Office. (see Policy: Religious Holidays, Holy Days and Observances)

Weather or other short-term closing

Following **Policy 6.15** (Weather or Other Short-Term Closing):

Should in-person classes be canceled, I will notify you as to which alternative methods of teaching will be offered to ensure continuity of instruction for this class. Communication will be via CarmenCanvas. Unless otherwise announced by the university, online or distance-learning classes will occur as scheduled.

Accessibility accommodations for students with disabilities

Requesting accommodations

The university strives to make all learning experiences as accessible as possible. If you anticipate or experience academic barriers based on your disability including mental health, chronic or temporary medical conditions, please let me know immediately so that we can privately discuss options. To establish reasonable accommodations, I may request that you register with Student Life Disability Services. After registration, make arrangements with me as soon as possible to discuss your accommodations so that they may be implemented in a timely fashion. **SLDS contact information:** slds@osu.edu; 614-292-3307; 098 Baker Hall, 113 W. 12th Avenue.

Accessibility of course technology

This online course requires use of Carmen (Ohio State's learning management system) and other online communication and multimedia tools. If you need additional services to use these technologies, please request accommodations with your instructor.

- CarmenCanvas accessibility
- Streaming audio and video
- CarmenZoom accessibility
- Collaborative course tools

Course Schedule

This course syllabus provides a general plan for the course; deviations may be necessary. Such deviations may be made for individuals or for the entire class, as deemed appropriate by the instructor. Any changes that affect the entire class will be announced by the instructor with as much advance notice as possible.

Geog 5212: Lecture Online, Lab Thu 12:30 pm- 2:05 pm

Module	Week	Day	Date	Topics	Format	Assignments Due
Concepts	w1	T	13-Jan-26	**Overview & Database basics**	*online*	
		R	15-Jan-26	Lab 0: getting started	in-class	syllabus quiz
	w2	T	20-Jan-26	**SQL basics**	*online*	Quiz 1
		R	22-Jan-26	Lab 1: SQL	in-class	Lab 0
	w3	T	27-Jan-26	**Spatial Databases**	*online*	Quiz 2
		R	29-Jan-26	Lab 2: SQL	in-class	Lab 1
	w4	T	3-Feb-26	**Conceptual modeling**	*online*	Quiz 3
		R	5-Feb-26	Lab 3: ER diagram	in-class	Lab 2
	w5	T	10-Feb-26	**Logical modeling**	*online*	Quiz 4
		R	12-Feb-26	Lab 4: Normalizing tables	in-class	Lab 3
Application	w6	T	17-Feb-26	**Object Orientation**	*online*	Quiz 5
		R	19-Feb-26	Lab 5: Creating Geodatabase	in-class	Lab 4
	w7	T	24-Feb-26	**Spatial objects & Modeling**	*online*	Quiz 6
		R	26-Feb-26	Lab 6: Create PostgreSQL database	in-class	Lab 5
	w8	T	3-Mar-26	**Data Storage**	*online*	Quiz 7
		R	5-Mar-26	Lab 7: Spatial Datatypes in PostGIS	in-class	Lab 6
	w9	T	10-Mar-26	**DBMS Architecture**	*online*	Quiz 8
		R	12-Mar-26	Lab 8: Spatial Functions in PostGIS	in-class	Lab 7
	w10	T	17-Mar-26	SPRING BREAK		
		R	19-Mar-26			
	w11	T	24-Mar-26	**No SQL Databases**	*online*	Quiz 9
		R	26-Mar-26	Lab 9: Geometry & Geography in PostGIS	in-class	Lab 8
Project	w12	T	31-Mar-26	**Project Overview and consultation**	*online*	
		R	2-Apr-26	Lab 10: Spatial Queries in PostGIS	in-class	Lab 9
	w13	T	7-Apr-26	**EXAM**	*online*	Proposal
		R	9-Apr-26	*Open Lab*	in-class	Lab 10
	w14	T	14-Apr-26	Project work	*Online*	
		R	16-Apr-26	*Open Lab*	in-class	
	w15	T	21-Apr-26			
		R	23-Apr-26	**Final Project Deliverables**	*online*	