SYLLABUS - GEOG 5210
Fundamentals of GIS

Course overview

Course Details:

3 Credit Hours, Spring 2026
Lecture – online
Recitation Sections: Derby Hall 0135, M or W 4:10 – 5:05 p.m.
Recitation Online (limited to MGIST Students)

Instructor and Teaching Assistant (TA) Information

Primary instructor: Dr. Tammy E. Parece
Email: parece.1@osu.edu   Office: Derby Hall 1189

Dr. Parece holds a BS in Interdisciplinary Studies, a Graduate Certificate in GIS, an MS in Geography and a PhD in Geospatial and Environmental Analysis.

Open Office hours: Monday and Wednesday 2 – 3 p.m., Tuesday 1 - 2 p.m. in person.
Any changes in office hours will be announced on Canvas.

You can generally expect a reply to e-mails within **48 hours on school days.**

TA: See Carmen Canvas for details.

If you are ill or have symptoms, please do not visit us in our offices. Please email us and we can set up a Teams link for your participation during our office hours.   To request an appointment outside of the above times, please send both instructor and TA an email with your availability up to a week ahead.

Course description
This course introduces basic principles of geographic information systems and their use in spatial analysis and information management.

Course Learning Outcomes
By the end of this course, students should successfully be able to:
- Understand the fundamentals of cartography and Geographic Information Systems
- Identify differences in geospatial models
- Demonstrate practical skills using GIS software

How This Course Works
Mode of delivery

- Your lectures are pre-recorded and online.
- Your labs (recitations) are in-person Monday or Wednesday, and attendance is taken (except MGIST students)

Credit hours and work expectations:

This is a 3-credit-hour course. According to The Ohio State University policy, an average student should expect around 3 hours per week of time spent on direct instruction (instructor content and Carmen activities, for example) and up to 6 hours of homework (reading and assignment preparation, as examples) to receive a grade of (C) average.

Important: Do not expect to complete entire lab assignments during the scheduled lab time. Lab sessions are 55 minutes, and it takes longer than 55 minutes to complete assignments. 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 in use for other classes.

Course materials

Required Lab Book: Shellito, Bradley A. Discovering GIS and ArcGIS Pro, 3rd edition. Macmillan Publishers. You *cannot* use a prior edition.
Optional Book: GIS *Fundamentals: A First Text on Geographic Information Systems, 6th Edition* by Paul Bolstad (2022). ISBN-13 is 9781593995522.
Additional required reading materials/videos/websites are provided within Canvas.

Course technology

For help with your password, university e-mail, Carmen, Buckeye Pass authorization, or any other technology issues, questions, or requests, contact the OSU IT Service Desk. Support for urgent issues is available 24x7.

Basic technical skills required:

- Computer Literacy
- Navigating Carmen: see the Canvas Student Guide.

IMPORTANT: The next two sections indicate equipment and software that you must be able to access to complete assignments for this course. You have access to these items in Derby 0135.

Hardware:

- Computer: Available in Derby Hall 0135 or your own PC compatible with running ArcGIS Pro
- USB Drive
- Other: a mobile device (smartphone or tablet) to use for BuckeyePass authentication

Software:

You are NOT required to purchase any software for this class. You will use a word processing program, a spreadsheet program, Adobe Reader, and ArcGIS Pro. You must use ArcGIS Pro for all assignments completed for this course. If you need assistance with installing ArcGIS Pro on your PC, do not contact IT, contact Dr. Parece as the Department of Geography has a GIS Administrator.

Computer Lab Access

BuckID access is required for DH 0135. The instructor and/or TA will be present during scheduled recitation. You will need to use your BuckID outside of normal class times. Derby Hall doors are locked

on the weekends and after 7 p.m. on scheduled class days. If you are the last person to exit the computer lab, please be sure that the lab door closes behind you.

Assignment information

Failure to follow the instructions on any assignment will result in a grade reduction for that specific answer (it might result in an incorrect answer). Any assignment includes quizzes, labs, discussions, and the final project. As an example: references for data are not included in map creation or in discussion posts.

Quizzes (15% of total grade)

6 quizzes. Each quiz is …
- Worth 20 points each
- If you forget to take it, I do not accept a late submission.
- 30 minutes, timed. (Exceptions for SLDS time alterations)
- You cannot get assistance with quizzes; these are required to be your own work.
- Collaboration with any other person is considered academic misconduct.
- The lowest of your 6 quiz grades is dropped (if you forget to take a quiz, that will result in a zero grade and your lowest grade).
- Check the schedule and Canvas for the due date and topics. The quizzes are approximately every other week.
- Use of AI is not permitted on any quiz (or any other assignment). If it comes to light that anyone (whether or not specifically identified) has used some type of AI to complete a quiz, all quizzes will become in-person and taken during your scheduled recitation times.

Required Online Graded Discussions (10% of total grade)

You will participate in 8 online discussions.

1st Discussion, we introduce ourselves. As part of this requirement, you need to respond to other students' posts finding something in common or interesting or intriguing. This allows you to connect with other students (3 reply posts are required).

Thereafter, we have 7 additional discussions related to course topics. A question is posted; you research it, post on the topic and include a reference. You will not receive credit for any discussion post that duplicates another student's post. The best way to avoid this is to post early, otherwise you will need to read **all** posts before adding your own. Check the syllabus and Carmen Canvas for the due dates on the discussion – these are not held every week.

Labs (60% of total grade)

Lab assignments are completed every week. Be careful as the deliverables vary, as are the due dates. In some instances, you answer questions posed in the Shellito Lab Book. Some require that you submit a map document, screenshots, or a written report. Read the Carmen Canvas instructions carefully for the deliverables. Lab assignments can be submitted as many times as you want up to the due date and time. Resubmissions (or redos) after the due date to get a better grade are not accepted.

Remember that completing any given GIS assignment may not go as smoothly as planned; unexpected challenges arise. Set a goal to submit each lab in advance of the due date, then if unexpected challenges do arise, you have time to deal with them. Some questions are graded automatically & some require

manual grading. There is a question and answer (Lab Q&A) area in Canvas for questions about Lab assignments. Posting comments about the labs in the graded discussions will not count towards your discussion grade.

Final Project/Final Exam (15% of total grade)

You have a final project.   No late submissions. Watch due dates – there are 2 for the final project. A timely proposal is 1% of your final grade. The final project is 14%.

If you are an undergraduate student, you can opt to take a final exam in lieu of completing a final project. To notify us that you want to take this option, upload a statement to this effect into the final project proposal folder and you will be exempted from the proposal and project, and a final exam will appear during the exam window (see the schedule below).   The final exam is 15% of your final grade.

Attendance

Attendance will be taken for all in-person recitation sessions.

Late Assignments

Late submissions for *any* assignment are not accepted.

Accommodation for religious holidays will be considered. A request must be submitted prior to any assignment due date that conflicts with such holidays. Please provide information on the holiday, its dates, the specific assignment, and the number of days requested in the extension.

In case of personal illness/emergencies, please notify us as soon as possible so that we can work out a submission timeline. Such extensions are decided on a case-by-case basis. Extensions are not granted after the fact, e.g., you can't ask for an extension on an assignment that was due two weeks before or wait until the end of the semester to submit assignments you missed. To request an extension for one of these emergency conditions, you must put the request in writing to Dr. Parece (cc to the TA). Again, you must identify the course, the reason, the specific assignment and the extension requested within your email.

Grading

Grading scale

92.5–100: A	80.0–82.49: B-	66.5 –69.99: D+
90.0–92.49: A-	76.5–79.99: C+	60.0 –66.49: D
86.5–89.99: B+	72.5–76.49: C	Below 59.99: E
82.5–86.49: B	70.0 –72.49: C-	

Note: 89.99 does not round up to 90%. For an A/A-, you must achieve 90% or better.

Incompletes:

If an emergency prevents you from finishing a course, you may request an "Incomplete" from the instructor. (https://advising.osu.edu/grades-and-grade-forgiveness).

Grade Breakdown

Assignment category	Percentage
Labs	60
Final Project/Final Exam	15
Weekly Quizzes (6)	15
Graded Discussions (8)	10
Total	100

Grades and feedback

You can expect grades and feedback to be returned within 1 week once the assignment deadline has passed, depending on the complexity of the assignment. If you have questions about your grade, address them via email to Dr. Parece within 48 hours of the posting of that grade. For quizzes that are automatically graded, answers will be posted after the due date and available for 1 week only.

Do not post comments in Carmen on an assignment after the due date and after grades have been completed. We do not get any type of notice from Carmen when you post such a comment. These comments should be sent to Dr. Parece via email.

Course Academic Integrity Policy

Turnitin is enabled for all written assignments. Please note that any assignments with significant scores may result in reporting a code of conduct violation to OSU's Committee on Academic Misconduct.

To maintain a culture of integrity and respect, generative AI tools cannot be used in the completion of course assignments, quizzes, or discussion posts unless specifically authorized by Dr. Parece.

Use of any other course materials/assignments in this class must be previously approved by both Dr. Parece and the instructor for the other course.

Instructor feedback and response time

Discussion board questions

You can expect a reply to Q&A posts within **48 hours on school days**. Although you might receive replies outside of those hours, please do not expect this. The determination of urgency is at the discretion of the instructor/TA. If you wait until the day an assignment is due to post a question, we cannot guarantee an immediate reply.

Student participation requirements

The following is a summary of student's expected participation:

- All work in this class must be your own. There are no joint assignment submissions for this class on any assignment!
- *Attendance is taken for all in-person labs/recitation days*.
- Participating in discussion forums: *Please post your questions to the appropriate discussion board. Posting questions to discussion boards is helpful as other students may have the same or similar questions.*

- Logging in: Be sure you are logging in to the course in Carmen each week. During most weeks you will 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.*
- Confidential Questions: Don't post questions online that may indicate answers to graded assignments and questions regarding your own grades. The former is an academic integrity concern, and the latter is a privacy concern.

Discussion and communication guidelines

The following are expectations for how we should communicate as a class. Please remember to be respectful and thoughtful.

- **Writing style**: When writing lab reports, you need to write these as if you were writing a formal essay. Use good grammar, spelling, references, and punctuation.
- **Tone and civility**: Maintain a supportive learning community where everyone feels safe and people can disagree amicably. Sarcasm is not appropriate in the classroom, in discussion posts, or in emails.
- **Citing your sources**: Cite your sources. For the textbook or other course materials, list at least the title and page numbers. For online sources, include a link as part of the correct and full citation. Not citing sources can result in a violation of The Ohio State University academic integrity policies.

COURSE AND UNIVERSITY POLICIES

Academic Misconduct:

Instructors shall report all instances of alleged academic misconduct to the committee (Faculty Rule 3335-5-48.7 (B)). For additional information, see the Code of Student Conduct | Ohio State (osu.edu).

Disability Services:

This course follows restrictions according to the University Disability Services policies.   Disability Services (osu.edu)**.**

Religious Accommodations:

This course follows the University religious accommodations policy. See information under assignments and for more information on the University's policy, go to: **Religious Holidays, Holy Days and Observances | Office of Academic Affairs, The Ohio State University (osu.edu).**

Mental Health Statement:

The Ohio State University offers services to assist you with addressing these and other concerns you may be experiencing. If you or someone you know are suffering from any of the aforementioned conditions, you can learn more about the broad range of confidential mental health services available on campus via the Office of Student Life's Counseling and Consultation Service (CCS) by visiting ccs.osu.edu or calling 614-292-5766. CCS is located on the 4th Floor of the Younkin Success Center and 10th Floor of Lincoln Tower. You can reach an on call counselor when CCS is closed at 614-292-5766 and 24 hour emergency help is also available 24/7 **by dialing 988 to reach the Suicide and Crisis Lifeline**.

University Statement on Title IX: http://titleix.osu.edu

Inclement Weather:

Should in-person classes be canceled by the University, we will be available during lab times via CarmenZoom Please be sure to check announcements in CarmenCanvas for updates.

Course Schedule – on the following pages

Disclaimer: This course syllabus provides a general plan for the course; deviations may be necessary. Any changes that affect the entire class will be announced by the instructor with as much advance notice as possible.

Week & Dates	Topics and Assignments - **This schedule is subject to change**	Weekly Learning Objectives
Week 1 January 12 - 17	Course Introduction, Introduction to Geospatial Technologies, GIS data Shellito Module 1 due 1/17 End of Week Survey due 1/17 (optional) Introduction Discussion Posts due 1/26	Summarize Course Requirements Identify and explain the 3 geospatial technologies Explain how ArcGIS Pro is set up Differentiate between Layout View and Map View in ArcGIS Pro Generate and export a complete and final map document in ArcGIS Pro
Week 2 January 18 - 24	Geodesy, Datums and Map Projections Shellito Module 2 due 1/24 **MLK Day 1/19/26 – No Class**	Describe a datum Explain the differences in projection systems Identify characteristics of a specific projection system
Week 3 January 25 - 31	Coordinate Systems Quiz Geodesy, Datums, Coordinate Systems and Map Projections due 1/31 Shellito Module 3 due 1/31 Datums, Coordinate Systems & Projections Discussion due 2/2	Explain the elements of a map Identify which specific elements are required in different maps Explain attribute data and tables Demonstrate how to construct a query
Week 4 February 1 - 7	Map Design, Attribute Data and Tables Shellito Module 8 due 2/6	Identify different coordinate systems Explain the importance of difference coordinate systems Describe when a specific coordinate system is used
Week 5 February 8 - 14	Thematic Maps, Digitizing and Editing Shapefiles Shellito Module 6 due 2/13 Quiz Map Design & Thematic Maps due 2/14 Thematic Maps Discussion Post due 2/16 End of Week Survey due 2/14 (optional)	Identify the 5 different types of maps Describe the differences between qualitative and quantitative maps Demonstrate how to generate a specific thematic map Explain normalization of data
Week 6 February 15 - 21	Vector Models Shellito Module 7 due 2/20	Describe the components of vector models Explain what type of data should be modeled as a vector file Identify vector data Demonstrate how to edit a vector file with GIS
Week 7 February 22 - 28	Spatial Data Analysis with Vector, Geocoding Shellito Modules 9 & 10 due 2/27 Quiz Vector Models and Boolean Operators due 2/28 Geoprocessing Tools Discussion Post due 3/2	Differentiate between types of spatial analyses Identify the appropriate GIS tool to use in a specific spatial analysis Demonstrate the geocoding process Review the accuracy of a geocoded dataset
Week 8 March 1 - 7	Raster Data Models Shellito Module 12 due 3/6 Shellito Module 15 due 3/9	Describe the components of raster models Explain what type of data should be modeled as a raster file Identify raster data Differentiate between types of resolution Demonstrate basic geoprocessing of raster data

Week 9 March 8 - 14	Raster, continued, with Terrain Analyses Shellito Module 15 due 3/9 Quiz Raster and Terrain due 3/13 Terrain Discussion Post due 3/13 Shellito Module 14 due 3/13	Explain interpolation Identify different interpolation methods Demonstration of creation of different terrain models
	Spring Break March 15 - 21	
Week 10 March 22 - 28	GIS Data Sources, Data Standards, Ethics, Georeferencing Georeferencing Lab due 3/28 End of Week Survey due 3/27 (optional) Ethics Discussion Post due 3/30	Explain metadata Identify how to locate and download geospatial data Demonstrate how to adequately cite geospatial data Identify Ethical Situations Demonstrate the georeferencing process
Week 11 March 29 – April 4	Aerial and Satellite Images Shellito Module 13 due 4/4 Land Observation Satellites Discussion Post due 4/6 Project Proposal due 4/8	Describe remote sensing Explain the electromagnetic spectrum Demonstrate remote sensing techniques using ArcGIS Pro
Week 12 April 5 - 11	Global Navigation Satellite Systems Displaying x, y data Quiz on Remote Sensing and GNSS due 4/11 Shellito Module 5 due 4/11 GNSS Discussion Post due 4/13	Demonstrate how to digitize data within ArcGIS Pro Explain GNSS Produce a vector file from collected data Demonstrate use of the National Map Viewer for locating geospatial data
Weeks 13 April 12 - 18	Spatial Data Bases, Spatial Modeling Quiz Week 10 and Week 13 Topics due on 4/20 Shellito Module 20 due 4/19	Describe spatial databases Utilize Boolean Operators in performance of a suitability analysis
Weeks 14, 15 & 16 April 19 – May 5	Final Project Work time Last Day of class April 27 Final Projects are due May 3 Final Exam open from April 29 to May 3 (timed and online – for undergrad students who elected the exam in lieu of a final project)	