



SYLLABUS - GEOG 5210 Fundamentals of GIS

Autumn 2025

3 Credit Hours, Hybrid

Lecture – online

Recitation Sections: Derby Hall 0135, M or W 3:55 – 5:05 p.m.

Course overview

Instructor and Teaching Assistant (TA)

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: Mondays 1 - 2 p; Tuesday and Friday 10 – 11 a, in person. Please check for any notes on my door that indicate I am in the computer lab for office hours on a particular day. Please also watch the announcements area in Canvas for any changes related to a specific day and office hours.

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

TA: See Carmen Canvas for details.

Srijana Shrestha:

Email: shrestha.137@buckeyemail.osu.edu

Location: Derby Hall 1131

Office hours: Monday & Wednesday 2:30-3:30 p.m. (In-person); & Tuesday 11:00am -12:00pm (Zoom)

Zoom link: <https://osu.zoom.us/j/98554452324?pwd=UJeh25moaSUgoFFHRg1lGbEs8qZPDc.1>

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 and land 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
- Demonstrate practical skills using ArcGIS Pro

How This Course Works

Mode of delivery

- Your lectures are pre-recorded and online.
- Your labs (recitations) are in Derby Hall 0135. *In-person attendance at labs is strongly recommended*
- Office Hours in person with Teams option.

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, for example) to receive a grade of (C) average.

Important: Do not expect to complete entire lab assignments during the scheduled lab time. Lab sessions are 80 minutes, and it takes longer than 80 minutes to complete GIS 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.

- **Self-Service and Chat support:** <http://ocio.osu.edu/selfservice>
- **Phone:** 614-688-HELP (4357) **Email:** 8help@osu.edu
- **TDD:** 614-688-8743

Basic technical skills required:

- Basic computer and web-browsing skills
- Navigating Carmen: see the [Canvas Student Guide](#).
- [CarmenZoom virtual meetings](#)

IMPORTANT: The next two sections indicate equipment and software that you must be able to access to complete lab assignments for this course. You have access to these items in Derby 0135, but if you install the software on your own computer, you will be able to finish GIS assignments at home.

Hardware

- Computer: PC compatible with running ArcGIS Pro
- USB Drive
- Other: a mobile device (smartphone or tablet) to use for BuckeyePass authentication

Software

Please remember 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. If you need assistance with installing ArcGIS Pro on your personal computer, do not contact IT, contact Dr. Parece and she will put you in touch with our GIS IT person. Please use ArcGIS Pro Version 3.4.X.

Computer Lab Access

BuckID access is required for DH 0135. The instructor and/or TA will be present during scheduled class times. 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.

Grading scale

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

Note – I do not round up. An 89.99 does not round up to 90%. If you want an A/A-, then 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 or category | Percentage |
|----------------------------------|------------|
| Labs | 60 |
| Final Project/Final Exam | 15 |
| Weekly Quizzes | 15 |
| Introduction Discussion | 01 |
| Graded Weekly Discussions | 09 |
| Total | 100 |

Assignment information

Failure to follow the instructions on any assignment will result in at least a 10% grade reduction for that specific answer (it might result in an incorrect answer). Any assignment includes quizzes, labs, and the final project. Examples include: the directions state you need to round to 1 decimal place and you give no decimal points or provide 2 or more; instructions state a screenshot of your login area, and you provide a screenshot of the entire ArcGIS Pro window.

Quizzes (15% of total grade)

There will be weekly quizzes. Each quiz will be ...

- *Due on by 11 a.m. on Monday* of the week after the topic in the schedule for that week
- Late quizzes are not accepted.
- Timed 20 minutes. (If you are registered with SLDS for extended time accommodations, please confirm that time has been granted before you begin the quiz.)
- You cannot get assistance with quizzes; these are required to be your own work.
- Collaboration with any other person is considered academic misconduct.
- 13 quizzes (Weeks 1 – 13). Your 2 lowest quiz grades will be dropped.

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.

Online Discussions (10% of total grade)

You will participate in online discussions. Week 1, 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). These introductions are required for all students. **(1% of total grade, ½ for your introduction and ½ for 3 reply posts).**

Thereafter, we have an online discussion each week. I post a question that you research and answer. Graded Discussions are marked as graded. There will be 12 weeks of discussion opportunities, you must participate in 9. Posts are due no later than Monday of the week following the topic. 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. (9% of total grade).

Labs (60% of total grade)

You will complete 14 Modules in the Shellito lab book. These Modules are not completed in numerical order, so see the schedule. You also need to be careful as the deliverables vary from Module to Module. In some instances, you answer questions posed in the Shellito Module. Some require that you submit a map document, screenshots, or a written report. Most weeks, more than one module is due.

You will have 2 lab assignments that are not from the Shellito book.

Remember that completing any given GIS assignment may not go as smoothly as planned; unexpected challenges will 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 (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.

Late Assignments

Late submissions for any assignments are not accepted in this course.

You have 1 chance to extend your deadline for 1 calendar day during the semester, applied to your chosen lab assignment. No permission is required, use this opportunity wisely; it can only be used once.

Accommodations 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 and its date and the number of days requested in the extension.

Additionally, in case of personal illness or personal/family emergencies, please notify me 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 TAs) with the following information:

Course Name and Code (GEOG 5210 Fundamentals of GIS)

Reason for the extension request:

The specific assignment:

Specific extension requested:

Attach documentation of the reason for the extension

Any emails requesting extensions without this information will be returned with a request to provide this information.

Course Academic Integrity Policy

Turnitin (<https://www.turnitin.com/>) is a plagiarism and AI verification platform. This check is set to automatically review any written documents submitted in an assignment folder. Please note that any assignments with a score of 25% or more may result in reporting a code of conduct violation to OSU's Committee on Academic Misconduct (please see the Academic Integrity Policy below). Please note that when you use quotes or repeat the assignment instructions within a written report, it increases the Turnitin and AI score. Avoid these when at all possible.

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

Instructor feedback and response time

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, you must address them to Dr. Parece within 48 hours of posting of that grade. For quizzes that are automatically graded, answers will be posted after the due date and available for 1 week only.

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.

Participation, discussions, and notifications

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 for any assignment!
- *In-person attendance at labs/recitation is strongly recommended.*
- Participating in discussion forums: Every week, there is a discussion board, and there is also a discussion forum for lab questions. *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:** 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. (Note: Excessive grammar, spelling, or punctuation errors in discussions or any other assignment submissions will be penalized at the discretion of the instructor/TA.) A more conversational tone is fine for non-academic topics.
- **Tone and civility:** Maintain a supportive learning community where everyone feels safe and people can disagree amicably. Remember that sarcasm doesn't always come across online. Be respectful to other students, the TAs and the instructor. Treat others as you would want yourself treated.
- **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.

Managing notifications

How can I manage notifications about course activity?

You can tailor your notifications by going to Account > Notifications. You can choose Email and/or Push notifications. You can choose what types of activity you want to follow.

If you want email notifications but you're not getting any at all, regardless of activating email notifications, then you may need to go Account > Settings and verify your email address.

COURSE AND UNIVERSITY POLICIES

Academic Misconduct, Artificial Intelligence and Academic Integrity

It is the responsibility of the Committee on Academic Misconduct to investigate or establish procedures for the investigation of all reported cases of student academic misconduct. The term "academic misconduct" includes all forms of student academic misconduct wherever committed; illustrated by, but not limited to, cases of plagiarism and dishonest practices in connection with examinations. Instructors shall report all instances of alleged academic misconduct to the committee (Faculty Rule 3335-5-487). For additional information, see the Code of Student Conduct <http://studentlife.osu.edu/csc/>.

Turnitin has been enabled for the lab and final paper submissions (<https://www.turnitin.com/>). Turnitin is a plagiarism and AI verification platform. This check is set to automatically review your paper when you submit it on Canvas. Please note that any assignments with significant scores may result in reporting a code of conduct violation to OSU's Committee on Academic Misconduct (please see the Academic Integrity Policy below). Please note that when you use quotes or repeat the assignment instructions within your written report, it increases the Turnitin and AI score. Avoid these when at all possible.

To maintain a culture of integrity and respect, generative AI tools should not be used in this complete of course assignments including lab reports, quizzes, exams, and final paper unless specifically authorized by Dr. Parece.

For more detailed information on Academic Misconduct, see:

- [Code of Student Conduct | Ohio State](#)
- [Committee on Academic Misconduct | Office of Academic Affairs](#)

Disability Statement (with Accommodation for Illness)

The university strives to maintain a healthy and accessible environment to support student learning in and out of the classroom. If students anticipate or experience academic barriers based on a disability (including mental health and medical conditions, whether chronic or temporary), they should let their instructor know immediately so that they can privately discuss options. Students do not need to disclose specific information about a disability to faculty. To establish reasonable accommodations, students may be asked to register with Student Life Disability Services (see below for campus-specific contact information). After registration, students should make arrangements with their instructors as soon as possible to discuss your accommodations so that accommodations may be implemented in a timely fashion.

If students are ill and need to miss class, including if they are staying home and away from others while experiencing symptoms of viral infection or fever, they should let their instructor know immediately. In cases where illness interacts with an underlying medical condition, please consult with Student Life Disability Services to request reasonable accommodations.

For more information: slds@osu.edu

<https://slds.osu.edu/>

098 Baker Hall, 113 W. 12th Ave
614-292-3307 phone

Religious Accommodations

This course adheres to The Ohio State University's policy on religious accommodations. Please note the late policy above for specifics on how to request accommodation for a specific assignment in this course. The University's policy can be found here: [Religious Holidays, Holy Days and Observances | Office of Academic Affairs](#)

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

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.

Counseling and Consultation Services / Mental Health Statement Columbus:

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 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 Younkun 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 through the 24/7 by dialing 988 to reach the Suicide and Crisis Lifeline.

Creating an Environment Free from Harassment, Discrimination, and Sexual Misconduct

The Ohio State University is committed to building and maintaining a welcoming community. All Buckeyes have the right to be free from harassment, discrimination, and sexual misconduct. Ohio State does not discriminate on the basis of age, ancestry, color, disability, ethnicity, gender, gender identity or expression, genetic information, HIV/AIDS status, military status, national origin, pregnancy (childbirth, false pregnancy, termination of pregnancy, or recovery therefrom), race, religion, sex, sexual orientation, or protected veteran status, or any other bases under the law, in its activities, academic programs, admission, and employment. Members of the university community also have the right to be free from all forms of sexual misconduct: sexual harassment, sexual assault, relationship violence, stalking, and sexual exploitation.

To report harassment, discrimination, sexual misconduct, or retaliation and/or seek confidential and non-confidential resources and supportive measures, contact the Civil Rights Compliance Office (CRCO):

Online reporting form: <http://civilrights.osu.edu/>
Call 614-247-5838 or TTY 614-688-8605
civilrights@osu.edu

The university is committed to stopping sexual misconduct, preventing its recurrence, eliminating any hostile environment, and remedying its discriminatory effects. All university employees have reporting responsibilities to the Civil Rights Compliance Office to ensure the university can take appropriate action:

- All university employees, except those exempted by legal privilege of confidentiality or expressly identified as a confidential reporter, have an obligation to report incidents of sexual assault immediately.
- The following employees have an obligation to report all other forms of sexual misconduct as soon as practicable but at most within five workdays of becoming aware of such information: 1. Any human resource professional (HRP); 2. Anyone who supervises faculty, staff, students, or volunteers; 3. Chair/director; and 4. Faculty member.

Inclement Weather

Should in-person classes be canceled, we will meet virtually via CarmenZoom during our regularly scheduled time. I will share any updates via [CarmenCanvas, email or other mode of communication].

Course Schedule

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 August 26 - 30 | Course Introduction, Introduction to Geospatial Technologies, GIS data Syllabus Quiz due no later than 11 a.m. on 9/2 Introduction Discussion Posts due 9/2 Shellito Modules 1 & 3 due 9/8 End of Week Survey due 8/30 (optional) | 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 August 31 – September 6 | Geodesy, Datums and Map Projections Week 2 Quiz due no later than 11 a.m. on 9/8 Week 2 Discussion Post due 9/8 Projections & Coordinate Systems Lab due 9/15 Labor Day 9/1 – No Class | Describe a datum Explain the differences in projection systems Identify characteristics of a specific projection system |
| Week 3 September 7 - 13 | Map Design, Attribute Data and Tables Week 3 Quiz due no later than 11 a.m. on 9/15 Week 3 Discussion Post due 9/15 Shellito Modules 2 & 8 due 9/22 | 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 September 14 - 20 | Coordinate Systems Week 4 Quiz due no later than 11 a.m. on 9/22 Week 4 Discussion post due 9/22 Modules 2 & 8 due 9/22 | Identify different coordinate systems Explain the importance of difference coordinate systems Describe when a specific coordinate system is used |
| Week 5 September 21 - 27 | Thematic Maps, Digitizing and Editing Shapefiles Week 5 Quiz due no later than 11 a.m. on 9/29 Week 5 Discussion Post due 9/29 Modules 6 & 7 due 10/6 End of Week Survey due 9/27 (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 September 28 – October 4 | Vector Models Week 6 Quiz due no later than 11 a.m. on 10/6 Week 6 Discussion Post due 10/6 Modules 6 & 7 due 10/6 | 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 October 5 – 11 | Spatial Data Analysis with Vector, Geocoding Week 7 Quiz due no later than 11 a.m. on 10/13 Week 7 Discussion Post due 10/13 Shellito Modules 9 & 10 due 10/15 | 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 October 12 - 18 | Raster Data Models Week 8 Quiz due no later than 11 a.m. on 10/20 Week 8 Discussion Post due 10/20 Shellito Module 12 due 10/24 | 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 October 19 - 25 | Raster, continued, with Terrain Analyses Week 9 Quiz due 11 a.m. on 10/27 Week 9 Discussion Post due 10/27 End of Week Survey due 10/25 (optional) Shellito Modules 14 & 15 due 10/31 | Explain interpolation Identify different interpolation methods Demonstration of creation of different terrain models |
| Week 10 October 26 – November 1 | GIS Data Sources, Data Standards, Ethics, Georeferencing Week 10 Quiz due no later than 11 a.m. on 11/3 Week 10 Ethics Discussion Post due 11/3 Georeferencing Lab due 11/7 | Demonstrate use of the National Map Viewer for locating geospatial data 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 November 2 - 8 | Aerial and Satellite Images Week 11 Quiz due no later than 11 a.m. on 11/10 Week 11 Discussion Post due 11/10 Project Proposal due 11/13 Shellito Modules 13 due 11/14 | Describe remote sensing Explain the electromagnetic spectrum Demonstrate remote sensing techniques using ArcGIS Pro |
| Week 12 November 9 - 15 | Global Navigation Satellite Systems Displaying x, y data Week 12 Quiz due no later than 11 a.m. on 11/17 Week 12 Discussion Post due 11/17 Shellito Modules 5 & 20 due 11/25 | Demonstrate how to digitize data within ArcGIS Pro Explain GNSS Produce a vector file from collected data |
| Weeks 13 & 14 November 16 - 25 | Spatial Data Bases, Spatial Modeling Week 13 Quiz due no later than 11 a.m. on 11/24 Week 13 Discussion Post due 11/24 Shellito Modules 5 & 20 due 11/25 | Describe spatial databases Utilize Boolean Operators in performance of a suitability analysis |
| Thanksgiving Break 11/26 – 11/30 | | |
| Weeks 15 & 16 December 1 - 18 | Final Project Work time Last Day of class 12/10 Final Projects are due 12/15 Final Exam open from December 12 to 16 (timed and online – for undergrad students who elected the exam in lieu of a final project) | |