GEOG 5210 Fundamentals of GIS – Spring 2020

Meeting Times:
Lecture: MW 3:00-3:55pm, CBEC 130
Lab: M or W 4:10-5:05pm, Derby Hall 135
OR
Lecture: TR 10:20-11:15am, Scott Lab E001
Lab: T or R 11:30am-12:25pm, Derby Hall 135

Instructor Name and Email: Dr. Emily S. Castellucci, castellucci.5@osu.edu
Office Hours and Location: https://osu.zoom.us/j/5747586898
Information about availability will be posted on the course website.

Teaching Assistant(s):

Name, Email	Office Hours and Location
Blake Acton (MW), acton.58@osu.edu	https://osu.zoom.us/j/9309005210 Information about availability will be posted on the course website.
Zhihao Wang (TR), wang.11424@osu.edu	https://osu.zoom.us/j/6519982104 Information about availability will be poste don the course website.

Course Description: This course introduces principles of geographic information systems (GIS) and their applications in spatial analysis and information management. The course is designed to give students an understanding of cutting-edge geospatial technologies, their capabilities, uses, and limitations. Representative applications for each discipline area are demonstrated in the computer laboratory portion.

Course Learning Objectives:
Upon completion of this course, students should be able to…
- Communicate the applicability of GIS and spatial analysis in the present day.
- Create geospatial data from scratch or from existing geospatial data sources.
- Work with geospatial data, including access, management, and manipulation spatial data.
- Utilize spatial functions and operations in the manipulation of spatial data, as appropriate to various contexts.
- Generate sharable outputs resulting from geospatial analyses, including in cartographic form using basic mapping principles.
- Connect concepts learned in class to real world problems, workflows, and solutions.
- Identify employment and career opportunities relevant to GIS.

Schedule: You can find the schedule as a Google Doc at this link: Schedule.

Textbook:
We will use the book *GIS Fundamentals: A First Text on Geographic Information Systems, 6th Edition* by Paul Bolstad (2019) as the strongly recommended text for this course. The ISBN-13 for

this book is 9781593995522. The 5th edition (2016) is acceptable, but editions older than the 5th edition are unacceptable.

Evaluation:
- Labs: 48%
  - There will be 10 labs, and all labs will be counted toward your final grade in the course. No labs will be dropped.
  - Do not expect to complete all of your lab work during the scheduled lab time. You will need to dedicate time outside of class to completing your labs.
- Exams: 42%
  - There will be 4 exams, and your lowest exam grade will be dropped.
  - Exams will be administered via the course website, and they will be timed, open-note exams that you must complete *individually*.
- Participation/Attendance: 10%
  - Attendance will be taken at all lecture meetings and lab meetings using a sign-in sheet. You must sign the sheet during the scheduled class time to be considered present. Failure to sign the sheet during the scheduled class time is considered an absence.
  - Attendance is worth 10 points in total. You are allowed 2 unexcused absences from lecture without penalty. After this, every unexcused absence results in a -0.5 point deduction. You are allowed 1 unexcused absence from lab without penalty. After this, every unexcused absence results in a -1 point deduction. No more than 10 points can be lost toward your attendance score.
  - Excused absences may be requested by contacting the instructor/TA. Decisions about excused absence requests are made at the discretion of the instructor/TA. It is highly recommended that documentation in support of the request is provided as soon as possible to expedite the decision-making process.
  - Due to cancellation of all remaining face-to-face class meetings, attendance will only be recorded for grade purposes through Friday, March 6th.
- *Grading Scale* (OSU standard scale):

A	93-100%	B-	80-82%	D+	67-69%
A-	90-92%	C+	77-79%	D	60-66%
B+	87-89%	C	73-76%	E	0-59%
B	83-86%	C-	70-72%		

  Note: Your final grade as seen on the course website is rounded to the nearest whole number (e.g. an 89.49 is a B+ but an 89.50 is an A-). No other adjustment or curve will be applied. The letter grade that you see on the course website is what will be submitted to the registrar at the end of the semester.

Policies:
1. *Course correspondence policies.*
   a. Use the proper title when addressing your instructors/TAs. Recommended resource: [What should I call my professor?](#) For example: Because Emily S. Castellucci has a Ph.D., it's always Dr. Castellucci, *never* Ms., Mrs., or Miss.

b. When emailing your instructors/TAs using OSU email, always include the course number and meeting time somewhere in the subject or body of the email. This information will help your instructor/TA respond more quickly.

c. You are responsible for all announcements, assignments, and other material posted on Carmen. It is highly recommended that you review your Carmen Canvas notification settings each semester to ensure that you are receiving the information that you need to succeed.

d. If you need help with lab assignments outside of class time, you should post your question(s) to the appropriate discussion on the course website. This is great practice for posting in online forums for assistance when working on projects outside of class. Additionally, using discussion boards for lab questions helps us respond to questions in an efficient manner, so do not send your questions via OSU email or Carmen message, unless it is grade-related.

2. *Late policy*.
   a. You can submit assignments up to ==one week== late ==unless otherwise posted==, but the late penalty is 5% (of the total possible score) per day. The late penalty will not reduce grades to below 70% (of the total possible score). Late penalties are managed by the course website and automatically applied.

   b. Extensions are NOT typically granted due to getting "stuck," encountering unexpected errors, software crashes, lost work, inability to access the lab classrooms and/or Derby Hall, or other issues related to these. This is because these are realistic issues that you are likely to encounter when performing GIS work outside of this class, and you need to learn how to manage these issues when they arise. However, do keep in touch with your instructor/TA when issues arise so that we can provide support.

3. *Exam policies*.
   a. Make-up exams are allowed, but they may be classified as excused (no penalty) or unexcused (10% penalty), as deemed appropriate by the instructor.

   b. ~~You are expected to arrive to all exams *on time*. If you arrive late, you might not be allowed to begin the exam, as deemed appropriate by the instructor.~~

   c. ~~You are expected to finish all exams *on time*. Exams begin when scheduled class time begins, and exams end when the scheduled class time ends. At the end of the scheduled class time, you are to stop working and turn in your exam. You may not continue working on your exam after the scheduled class time.~~

4. *Disability services policy*. 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; slds.osu.edu; 098 Baker Hall, 113 W. 12th Avenue.

5. *Academic integrity/misconduct policies*.
   a. It is the responsibility of the Committee on Academic Misconduct (COAM) 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/pdfs/csc_12-31-07.pdf.
   b. IMPORTANT: "Warnings" are not given due to an offense being one's first offense, due to ignorance of what constitutes academic misconduct, or due to any other circumstances. *All* instances of suspected misconduct must be reported.
   c. For specific academic integrity/misconduct information relevant to this course, see the Academic Integrity Supplement link under Modules > Course Information on the course website.
6. *Other policies.*
   a. If you are ill, please consider the health of your fellow classmates and your instructor/TA when deciding whether or not you should come to class. If you are displaying symptoms indicating that what you have may be contagious (e.g. fever, etc.), please do not come to class. Instead, notify your instructor of your illness and ask how you can make up the missed class.
   b. Practice your professionalism by ensuring that your work is free from spelling and grammatical errors. Such errors may be penalized at the discretion of the instructor/TA.

Student Support Services:
For information about student support services, see the Student Support Services link under Modules > Course Information on the course website.

Technology:
For information about software access, computer access, classroom access, and building access, see the Technology Access link under Modules > Labs on the course website.

Feedback:
If you'd like to make a suggestion for how this course could be improved for future semesters, please submit that suggestion in the Suggestion Box (Google Form). However, please keep in mind that form submissions are not likely to be viewed until after the semester has ended, so if your concern requires a timely response, please email your instructor and/or TA, as appropriate.

Disclaimer:
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.

Schedule (revised)

Week	Date	Lectures/Readings*	Exams**	Labs**
11	M 3/23		Exam 2 opens	*Releasing Lab 7*

	W 3/25	10 - Topics in Raster Analysis
		   Read Chapter 10 (optional, recommended)
		11 - Terrain Analysis
		   Read Chapter 11 (optional, recommended)		

	F 3/27		**Exam 2 DUE @ 11:59pm** *Late submissions NOT accepted.* (This exam covers Lectures 5-9.)	
12	M 3/30			*Releasing Lab 8* **Lab 7 DUE @ 11:59pm**
	W 4/1	12 - Spatial Estimation: Interpolation, Prediction, Core Area *Read Chapter 12 (optional, recommended)*		
13	M 4/6			*Releasing Lab 9* **Lab 8 DUE @ 11:59pm** Lab 7 closes
	W 4/8	13 - Spatial Models and Modeling *Read Chapter 13 (optional, recommended)*		
14	M 4/13			**Lab 9 DUE @ 11:59pm** Lab 8 closes

	W 4/15	14 - Data Standards and Data Quality
		   Read Chapter 14 (optional, recommended)
		15 - New Developments in GIS (optional)
		   Read Chapter 15 (optional, recommended)		

15	M 4/20		Exam 3 opens (This exam covers Lectures 10-14.)	**Lab 5 DUE @ 11:59pm** **Lab 6 DUE @ 11:59pm** Lab 9 closes
	F 4/24		**Exam 3 DUE @ 11:59pm** *Late submissions NOT accepted.*	

16	M 4/27		Exam 4 opens (This exam covers Lectures 1-14.)	Lab 5 closes Lab 6 closes
	F 5/1		**Exam 4 DUE @ 11:59pm** *Late submissions NOT accepted.*	

* The assigned reading prepares you for the next lecture.

** Deadlines listed in this column apply to everyone, regardless of section.

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

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Schedule (original)

Key:
LIGHT BLUE applies to students in the Monday/Wednesday section.
LIGHT GREEN applies to students in the Tuesday/Thursday section.
LIGHT RED applies to ALL STUDENTS, regardless of section.

Remember: *Lab sections always meet, regardless of what is taking place during lecture.*

Week	Date	Lecture	Reading*	Notes**
1	M 1/6	Course Overview	Chapter 1	
	T 1/7	Course Overview	Chapter 1	
	W 1/8	1 - An Introduction to GIS	Chapter 2, pp. 27-59	
	R 1/9	1 - An Introduction to GIS	Chapter 2, pp. 27-59	
2	M 1/13	2 - Data Models – Part 1	Chapter 2, pp. 60-86	
	T 1/14	2 - Data Models – Part 1	Chapter 2, pp. 60-86	
	W 1/15	2 - Data Models – Part 2	Chapter 3, pp. 87-115	
	R 1/16	2 - Data Models – Part 2	Chapter 3, pp. 87-115	**Lab 1 - An Introduction to GIS DUE @ 11:59pm**
	F 1/17			**Self Introduction and Syllabus Quiz DUE @ 11:59pm**
3	M 1/20	HOLIDAY		
	T 1/21	3 - Geodesy, Datums, Map Projections and Coordinate Systems – Part 1	Chapter 3, pp. 116-146	
	W 1/22	3 - Geodesy, Datums, Map Projections and Coordinate Systems – Part 1	Chapter 3, pp. 116-146	
	R 1/23	3 - Geodesy, Datums, Map Projections and Coordinate Systems – Part 2	Chapter 4, pp. 147-167	
4	M 1/27	3 - Geodesy, Datums, Map Projections and Coordinate Systems –	Chapter 4, pp. 147-167	**Lab 2 - Data Models DUE @**

		Part 2		11:59pm
	T 1/28	4 - Maps, Data Entry, Editing, and Output – Part 1	Chapter 4, pp. 168-200	
	W 1/29	4 - Maps, Data Entry, Editing, and Output – Part 1	Chapter 4, pp. 168-200	
	R 1/30	4 - Maps, Data Entry, Editing, and Output – Part 2		
5	M 2/3	4 - Maps, Data Entry, Editing, and Output – Part 2		No lab due today.
	T 2/4	**Exam 1** (This exam covers Lectures 1-4.) *Note: Labs always meet, even on exam days!*	Chapter 5	
	W 2/5	**Exam 1** (This exam covers Lectures 1-4.) *Note: Labs always meet, even on exam days!*	Chapter 5	
	R 2/6	5 - Global Navigation Satellite Systems and Coordinate Surveying	Chapter 6, pp. 245-272	
6	M 2/10	5 - Global Navigation Satellite Systems and Coordinate Surveying	Chapter 6, pp. 245-272	**Lab 3 - Geodesy, Datums, Map Projections and Coordinate Systems DUE @ 11:59pm**
	T 2/11	6 - Aerial and Satellite Images – Part 1	Chapter 6, pp. 273-298	
	W 2/12	6 - Aerial and Satellite Images – Part 1	Chapter 6, pp. 273-298	
	R 2/13	6 - Aerial and Satellite Images – Part 2	Chapter 7	
7	M 2/17	6 - Aerial and Satellite Images – Part 2	Chapter 7	**Lab 4 - Maps, Data Entry, Editing and Output - Part 1 DUE @ 11:59pm**
	T 2/18	7 - Digital Data	Chapter 8, pp. 331-349	
	W 2/19	7 - Digital Data	Chapter 8, pp. 331-349	
	R 2/20	8 - Attribute Data & Tables – Part 1	Chapter 8, pp. 350-372	
8	M 2/24	8 - Attribute Data & Tables – Part 1	Chapter 8, pp. 350-372	**Lab 5 - Maps, Data Entry, Editing and Output - Part 2 DUE @ 11:59pm**
	T 2/25	8 - Attribute Data & Tables – Part 2	Chapter 9, pp. 373-403	

	W 2/26	8 - Attribute Data & Tables – Part 2 *Midterm Evaluations*	Chapter 9, pp. 373-403	
	R 2/27	9 - Basic Spatial Analysis – Part 1 *Midterm Evaluations*	Chapter 9, pp. 404-444	
9	M 3/2	9 - Basic Spatial Analysis – Part 1	Chapter 9, pp. 404-444	**Lab 6 - Global Navigation Satellite Systems, Aerial and Satellite Images, Digital Data, and Attribute Data & Tables DUE @ 11:59pm**
	T 3/3	9 - Basic Spatial Analysis – Part 2		
	W 3/4	9 - Basic Spatial Analysis – Part 2		
	R 3/5	TBD: Catch Up / Review Day / Other		
10	M 3/16	TBD: Catch Up / Review Day / Other		No lab due today.
	T 3/17	**Exam 2** (This exam covers Lectures 5-9.) *Note: Labs always meet, even on exam days!*	Chapter 10, pp. 445-461	
	W 3/18	**Exam 2** (This exam covers Lectures 5-9.) *Note: Labs always meet, even on exam days!*	Chapter 10, pp. 445-461	
	R 3/19	10 - Topics in Raster Analysis – Part 1	Chapter 10, pp. 462-484	
11	M 3/23	10 - Topics in Raster Analysis – Part 1	Chapter 10, pp. 462-484	**Lab 7 - Basic Spatial Analysis DUE @ 11:59pm**
	T 3/24	10 - Topics in Raster Analysis – Part 2	Chapter 11	
	W 3/25	10 - Topics in Raster Analysis – Part 2	Chapter 11	
	R 3/26	11 - Terrain Analysis	Chapter 12, pp. 521-546	
12	M 3/30	11 - Terrain Analysis	Chapter 12, pp. 521-546	**Lab 8 - Topics in Raster Analysis and Terrain Analysis DUE @ 11:59pm**
	T 3/31	12 - Spatial Estimation: Interpolation, Prediction, Core Area – Part 1	Chapter 12, pp. 547-572	
	W 4/1	12 - Spatial Estimation: Interpolation, Prediction, Core Area – Part 1	Chapter 12, pp. 547-572	

	R 4/2	12 - Spatial Estimation: Interpolation, Prediction, Core Area – Part 2	Chapter 13, pp. 573-596	
13	M 4/6	12 - Spatial Estimation: Interpolation, Prediction, Core Area – Part 2	Chapter 13, pp. 597-615	**Lab 9 - Spatial Estimation: Interpolation, Prediction, Core Area Delineation DUE @ 11:59pm**
	T 4/7	13 - Spatial Models and Modeling	Chapter 14	
	W 4/8	13 - Spatial Models and Modeling	Chapter 14	
	R 4/9	14 - Data Standards and Data Quality		
14	M 4/13	14 - Data Standards and Data Quality		**Lab 10 - Spatial Models and Modeling DUE @ 11:59pm**
	T 4/14	TBD: Catch Up / Review Day / Other *Lab attendance optional for students who have submitted all labs.*		
	W 4/15	TBD: Catch Up / Review Day / Other *Lab attendance optional for students who have submitted all labs.*		
	R 4/16	**Exam 3** (This exam covers Lectures 10-14.) *Lab attendance optional for students who have submitted all labs.*		
14	M 4/20	**Exam 3** (This exam covers Lectures 10-14.) *Lab attendance optional for students who have submitted all labs.*		
	W 4/22			**Final Deadline: Late Submissions DUE @ 11:59pm**
Final Exam	F 4/24, 4:00pm - 5:45pm	**Exam 4** (This exam covers Lectures 1-14.) This is the final exam for students in the **M/W** section.		
	T 4/28, 8:00am - 9:45am	**Exam 4** (This exam covers Lectures 1-14.) This is the final exam for students in the **T/R** section.		

* The assigned reading prepares you for the next lecture.

** Deadlines listed in this column apply to everyone, regardless of section.

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