GEOG 5201 Geovisualization (Distance-Enhanced Class, DH) Syllabus AU2020

Instructor Information

- Dr. Yang Song, song.630@osu.edu
- Office Hour and Location: M 11:10am-12:30pm in Derby 135 for cohort office hour (check the last page of this syllabus for schedule), or by email and Zoom appointment.

Teaching Associates

- TA: Nicholas Kinyanjui, kinyanjui.3@buckeyemail.osu.edu
- Office Hours and Location: By Zoom appointment only

Cohort use of lab PCs in Derby 135: M&W 11:10am-12:30pm (check the last page of this syllabus for schedule)

Course Description

This is a topic-oriented course focusing on the examination of concepts, techniques, issues and applications of analytical cartography, interactive mapping, and scientific visualization of geographic data. Approximately half of the course will be lectures introducing concepts and theories of geovisualization. The rest of the course will provide hands-on experience on interactive mapping and visualization of geographic data with ArcGIS and other software.

This course is mostly online with weekly in-person cohort office hours, and there is no required log-in to Carmen at a scheduled time. The course is divided into weekly modules which are released weekly. Students are expected to keep up with weekly deadlines. This is a 3-credit hour class. For each week, students should expect approximately 3 hours spent on online lectures and labs, and 6 hours of independent study such as textbook reading, online quizzes, lab assignments and preparation for the exam to earn a C grade.

Course Learning Outcomes

By the end of the semester, students should be able to:

- Describe following concepts: analytical cartography, spatialization, interactive visualization, scientific visualization and geovisualization. Identify goals, driving forces, cognitive aspects, and widely employed methods and techniques of geovisualization.
- Understand the motivation of the development of 3D geovisualization. Identify the gains of going from 2D to 3D. Think critically about 3D geovisualization, identify potential problems employing 3D visualization techniques.

- Memorize the full name of LiDAR and describe the purpose of this remote sensing technique. Describe the physical process, operational theory, components, and principles of LiDAR systems. Understand basic processing steps of LiDAR data.
- Understand the concept of uncertainty and its importance in visualizing geographic data. Describe and compare methods of mapping uncertainty with visual variables.
- Know how time geography was born and understand the concept of space-time. Describe the constrains of space-time and how to use space-time prism to address space-time. Explain why time geography has barely developed since born and how GIS helps the visualization of time.
- Describe the brief evolution of cartography, from general purpose maps to cartography to web and interactive mapping. Identify the context of the emerging of web mapping. Describe the gold of web mapping and explain the difference between traditional and web mapping. Compare and contrast visual elements employed in traditional and web mapping. Identify programming languages and data formats utilized in web mapping.

Materials

- Textbook:
    - No textbook is required for this course. All reading materials will be provided via the course website.
- Data storage:
    - A portable memory device (with 16GB or larger storage) or a cloud drive (Box, Dropbox etc.) is needed for data storage.

Evaluation

- Labs – 40%
    - There will be 12 labs, each with an assignment. All lab assignments will count toward your final grade of the course.
    - Lab assignments are usually due ***one week after the lab session***. Please refer to the course schedule for detailed information.
    - All lab assignments will be submitted via the course website in a quiz-like format. For each assignment, you need to answer several questions and may be asked to upload your work and/or data. Assignment questions will be provided to you in advance at the end of each lab's instruction.
    - Do not expect to finish all lab work during the scheduled lab time. You will need to work outside of regular class time to complete your labs.
- Exams – 40%
    - There will be two non-cumulative open-book exams (dates can be found in course schedule). Both will be administered via Carmen. More details (question format, exam time and length etc.) will be provided at least one week before each exam via Carmen.
    - Exams will not be returned to you. If you want to review exams, please schedule a meeting with the instructor.

- Short Essays – 20%
    - There will be 4 short essay assignments focusing on the themes of 3D, LiDAR, Time, and Web. After reading papers related to each theme, you will need to submit an essay of the geovisualization method covered by the readings of the theme via the course website. Please refer to course schedule for more information on when to read papers of different themes and dues of essays.
- 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%		

    - Your final grade as seen on the course website will be rounded to the nearest whole number (e.g. an 89.49 is a B+ while an 89.50 is an A) before being submitted to the University Registrar at the end of the semester.

Course Policies

- Email correspondence policy
    - You are responsible for all course related emails, so be sure to check your inbox on a daily basis.
    - When emailing your instructor, TA or grader, please always begin the subject of the email with the course number (GEOG5201) and your name (first name followed by last name). This is important as your instructor and TA teach multiple classes and need to know to which class you are referring. A proper email subject should be like this:

      GEOG5201_John Smith_Questions on Lab 3
- Course website policy
    - You are responsible for all announcements, additional readings, assignments and other material posted on the course website. Be sure to check it frequently.
    - You may find that it helps to update your notifications. You can do this by going to Account > Notifications. There are four notification options, and I suggest that you turn on “Notify me right away” or at least “Send daily summary” for everything until you figure out which notifications are most beneficial to you.
    - There is a Canvas app available for iPhone and Android, which you may find beneficial for keeping up with the course website.
- Lab questions policy
    - If you have any questions on lab content (can’t finish specific steps, tools are not working etc.), please meet your TA via Zoom or via email.
    - If you have concerns on lab grades, please contact your grader via email.
- Late submission policy
    - Short essays will not be accepted late.
    - Lab assignments will be penalized 10% for each day late.

    - Extensions will not be granted due to lost work; be sure you back up and keep all your work.
- Exam policy
    - Exams 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.
    - You are expected to finish all exams on time. 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.
- Disability services policy
    - Students with disabilities that have been certified by the Office for Disability Services (SLDS) will be appropriately accommodated and should inform the instructor as soon as possible of their needs.
        - Address: 098 Baker Hall, 113 W. 12th Ave, Columbus, OH 43210
        - Telephone: 614-292-3307
        - Website: http://slds.osu.edu/
    - Registration with SLDS does not grant accommodations automatically. You need to bring the accommodation form provided by SLDS to the instructor to work out a plan for accommodations. Please contact the instructor as soon as you are registered with SLDS for attendance, assignment and/or exam accommodations.
- Academic Misconduct policy
    - 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.
    - Collaboration for the purposes of troubleshooting is highly encouraged in this course, but everyone is expected to submit their own unique work. For example, asking a classmate how to resolve an unexpected error message is OK, but using another classmate’s work (e.g. screen captures, etc.) as your own is NOT ok, regardless of whether or not they provide consent for the use of their materials. (Note: There are many other acceptable/unacceptable actions than those exemplified here.) If you have any questions or concerns about acceptable/unacceptable actions, ask your instructor for clarification/permission.
    - All open-ended responses to questions, prompts, etc. must be written entirely, nearly entirely, or at least in majority using your own words. Use credible sources, and cite all sources, including those only referenced, those indirectly paraphrased, and those directly quoted, being sure to use

quotation marks to identify excerpts from these credible sources. This expectation to cite all of your sources also extends to the textbook, the lab instructions, lecture slides, other course materials, online resources, etc. Please contact Center for the Study and Teaching of Writing (CSTW, https://cstw.osu.edu/writing-center) or the instructor if you have difficulties organizing language for assignments.

- Other Course Policy
  - Please refer to Student Academic Services for more academic services provided by OSU.
  - Other student services can be accessed here.

Other Course Technology

Please contact OSU IT Service Desk for any help with password, university e-mail, Carmen, or any other technology issues, questions, or requests. Standard support hours are available at https://ocio.osu.edu/help/hours, and support for urgent issues is available 24x7.

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

Basic technical skills necessary for this course

- Basic computer and web-browsing skills
- Navigating and utilizing Carmen

Equipment

- Computer: As ArcGIS Desktop/Pro software will be used, a Windows PC is needed. Specific system requirements can be found here.
- Webcam: built-in or external webcam, fully installed.
- Microphone: built-in laptop or tablet mic or external microphone.

Software

- ArcGIS. You may request a 1-year student trial license from your TA. Just email your TA, and your TA will send you an activation code. You will then need to activate the code and download the software here: http://www.esri.com/software/landing_pages/arcgis/desktop-ed.
  - If you choose to go this route, there is a detailed document regarding the entire process of downloading and installing ArcGIS for Desktop and authorizing it using an authorization code available on the course website, entitled ESRI_installation_tips.pdf. If your installation-related questions are not answered by this document, you will need to contact ESRI Customer Support at 1 (888) 377-4575.
  - Please note that ArcGIS for Desktop is NOT certified or supported on the Mac operating system. However, if you have an Apple computer running Windows, you can install ArcGIS for Desktop using VMWare, BootCamp,

or Parallels. To learn more, please visit this link: http://gis.harvard.edu/services/blog/installing-arcgis-desktop-mac.
    - System requirements of ArcGIS desktop can be found here. Privacy policies of Esri products can be found here.
- ArcGIS Online and ArcGIS Pro. Please refer to associated installation documents in Carmen for detail. There is no specific system requirement for ArcGIS Online and you can use it as long as you have a web browser. System requirements of ArcGIS Pro can be found here. Privacy policies of Esri products can be found here.
- QGIS. This is free and open source and can be obtained by visiting https://www.qgis.org/en/site/. Unlike ArcGIS, QGIS can operate on the Mac operating system.
    - Please note that if you choose to install QGIS onto your personal machine, your instructor and TA are NOT responsible for answering your installation-related questions. You will need to troubleshoot such issues yourself.
    - There is no official documents regarding system requirements of QGIS, but you can find useful discussion on this topic here. There are no official privacy policies from developers of QGIS.
- Microsoft Office 365
    - All Ohio State students are now eligible for free Microsoft Office 365 ProPlus through Microsoft's Student Advantage program. Each student can install Office on five PCs or Macs, five tablets (Windows, iPad® and Android™) and five phones.
    - Office 365 is installed within student's BuckeyeMail account. Full instructions for downloading and installation can be found here.
    - Proctorio: A software to monitor online exams. More details can be found here.

Class Content Schedule

Week	Date	Content	Readings	Note
1	08/26	Course Overview	Lecture readings: Geovisualization	
2	08/31	Lecture: Geovisualization - Part 1		
	09/02	Lecture: Geovisualization - Part 2	Lecture readings: 3D	
3	09/07	Labor Day, no class		
	09/09	Lecture: Geovisualization - Part 3 3D - Part 1	Essay readings: 3D	
4	09/14	Lecture: 3D - Part 2		
	09/16	Lab 1: 3D ArcScene (guided)		Essay on 3D Due
5	09/21	Lab 2: 3D ArcScene (unguided)		
	09/23	Lab 3: 3D QGIS (guided & unguided)		Lab 1 Due
6	09/28	Lecture: LiDAR - Part 1	Essay readings: LiDAR	Lab 2 Due
	09/30	Lecture: LiDAR - Part 2		Lab 3 Due
7	10/05	Exam 1		Essay on LiDAR Due
	10/07	Lab 4: LiDAR (guided)	Lecture readings: Uncertainty	
8	10/12	Lecture: Uncertainty	Lecture readings: Animation	
	10/14	Lecture: Animation Lab 5: Animation (guided & unguided)	Lecture readings: Time	Lab 4 Due
9	10/19	Lecture: Time	Essay readings: Time	
	10/21	Lab 6: Time (guided)		Lab 5 Due
10	10/26	Lab 7: Time (unguided)	Lecture readings: Web	Essay on Time Due
	10/28	Lecture: Web – Part 1	Essay readings: Web	Lab 6 Due
11	11/02	Lecture: Web – Part 2		Lab 7 Due
	11/04	Exam 2		Essay on Web Due
12	11/09	Lab 8: Web 1 (guided & unguided)		
	11/11	Veterans Day, no classs		
13	11/16	Lab 9: Web 2 (guided & unguided)		Lab 8 Due
	11/18	Lab 10 (guided & unguided)		
14	11/23	Lab 11 (guided)		Lab 9 Due
	11/25	Lab 12 (guided & unguided)		Lab 10 Due
15		Work on labs, no class		Lab 11 Due
				Lab 12 Due

This course schedule provides a general plan for the course. Any changes will be announced by the instructor with as much advance notice as possible.

Cohort Office Hour and Lab Use (Derby 135) Schedule

Week	Date	
1	08/26	No office hour
2	08/31	No office hour
	09/02	No lab use
3	09/07	Labor Day, No office hour
	09/09	No lab use
4	09/14	Office hour for G1
	09/16	Lab use for G1
5	09/21	Lab use for G2
	09/23	Lab use for G3
6	09/28	Office hour for G2
	09/30	Lab use for G1
7	10/05	Exam 1, No office hour
	10/07	Lab use for G2
8	10/12	Office hour for G3
	10/14	Lab use for G3
9	10/19	Office hour for G1
	10/21	Lab use for G1
10	10/26	Office hour for G2
	10/28	Lab use for G2
11	11/02	Office hour for G3
	11/04	Exam 2
12	11/09	No office hour
	11/11	Veterans Day, No lab use
13	11/16	No office hour
	11/18	Lab use for G3
14	11/23	No office hour
	11/25	No lab use