Advanced Geospatial Analysis
Spring 2020

ID 351d- GIS Center, Scribner Library Room 227

Classes W/F - 10:30 am - 12:20 pm

Field trip - TBD

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Office hours: Thursdays | 11 am - 2 pm
By Appt: calendly.com/bettigole

Course Description:

This course provides an in-depth experience in applied GIS, remote sensing, and cartography. Students will develop skills in spatial analysis, remote sensing, and data science related to both the biophysical and social sciences. Students will become versed in advanced software applications for ArcGIS Pro and an introduction to command line analysis in Google Earth Engine (JavaScript) Python, and R using both remotely-sensed and vector-based data. The course will provide an additional focus on professional map production for publication and application. As an interdisciplinary course, topics will be adjusted to match student backgrounds, with the opportunity to individually explore topics specific to student interests through semester-long applied project work.

Objectives:

Students will complete this course with ***expertise*** in spatial data acquisition, field data collection with GPS & mobile devices, spatial analysis & modeling, static & interactive data visualization techniques, and project management skills. Students will build on prior experience with ArcGIS and QGIS, while building new skills in ArcGIS Pro, Javascript in Google Earth Engine, R, and Python (ArcPy). Students will gain experience with project management and "client" relations in working on semester-long projects.

Communication:

In the interest of learning collectively, all course communications will come through **Slack** - *skidmoregis.slack.com*. This includes class announcements as well as questions for the instructor. Notices will be shared in Slack when assignments go live (posted on theSpring). We will spend some time on the first day of class familiarizing ourselves with this tool. While Slack can accommodate direct messaging to the instructor, I would ask that students post questions to the public channels to enable broad sharing of information. During the work day, I will attempt to respond as quickly as possible. I will check slack once in the evenings during the week around 9 pm, and will try to check in once a day over the weekend. For urgent matters please text me at the number listed above. Try to avoid email communication. Part of your participation grade will include engagement over Slack.

Assignments:

All submissions will be electronic and submitted on theSpring unless noted. You will be graded on the accuracy of your responses, assignment formatting, project management & data organization, and visual layout & design. There are no regular readings, but occasional readings will be sourced from journal articles and GIS related current events (all available on theSpring).

On time assignments will receive a 2 point bump (e.g. go from 86% to 88%). Assignments more than one day late will lose 3 points a day and will not be accepted beyond 1 week from the original due date

Assignments	44%
Class Instruction	13%
Final Project	36%
Participation	7%

Learning Goals:

- Solve geographic problems by finding relevant data and using appropriate analytical techniques
- Find more than one solution to complex issues. Be flexible and creative!
- Gain expertise in data and project management techniques through "client" facing independent projects
- Independently collect, manage, and analyze data collected in the field.
- Communicate lab work through maps, reports, and presentations.
- Exercise the artistic side of design and cartography.
- Understand practical applications of GIS across a variety of academic and professional disciplines & learn how you will use GIS in your future careers

Commonly Used Resources:

- GIS network drive - IntroGIS, GIS Library, GIS Projects (youtube video)
- Other Skidmore cloud storage: Google Drive, datastor, OneDrive, Box
- Slack tutorial
- Skidmore GIS YouTube
- Online GIS resources: ArcGIS Online; Google My Maps; NYS GIS Clearinghouse; NRCS Geospatial Data Gateway; National Map; USGS Earth Explorer; US Census data; CalTopo

Course Guidelines and Helpful Tips:

- It's cold in here and we can't change the temp, bring a sweater or a lap blanket! I've even seen fingerless gloves.
- Bring a set of headphones to class that you can plug into your computer.
- A USB thumb drive can be handy. Rename the drive to your name or the course name.
- Please do not use cell phones or non-GIS websites, except when asked to do so for class assignments.
- Classes are workshop oriented - I'll try to avoid lecturing, and instead focus on the application of the GIS software
- As you know, GIS isn't super intuitive. Please work together and help each other out (unless specified otherwise), while keeping labs/exams your own work.
- Finally, if you are working on projects with community partners, you are representing Skidmore, the GIS Center, and my professional reputation. I expect that you will maintain active lines of communication and go above and beyond to meet their needs in a thoughtful and professional manner.

How Does the Final Project Work?

The largest portion of your grade for this course will be an open-ended, applied geospatial group project. I will work to design a number of projects, but you are also welcome to pitch me an idea that we'll work together to build out into a cohesive, engaging deliverable.

In addition to regular informal check-ins and communication with community partners, you will hand in a workflow & literature review early in the semester, present a rough-draft of your work mid-semester to your classmates, present your final work at the end of the semester to your classmates and community partners, and hand in a custom deliverable (e.g. maps, StoryMaps, reports).

I expect that you will work on the project throughout the entire semester. While you will have some assignments at the beginning of the semester, your primary focus outside of class will be building a high-quality product that you will be proud to share with your community partner and with prospective employers in the future.

How Does *Instructor-for-the-Day* Work?

Each student will be in charge of teaching one ~45 minute lab in class. The topic will be of the student instructor's choosing and in the GIS software of their choosing. Student instructors may choose to highlight a previously unused tool and/or a particularly interesting dataset. This will involve the student-instructor finding and preparing data for use in class, researching practical applications of the tool/data to provide a context for the lesson, crafting a presentation and designing in-class tutorials that students can follow along with. You may ask fellow students to read/prepare for your section as needed.

Students will submit an outline of their teaching plan and meet with Charlie **one week prior** to the date of their lecture.

It would be neat if you could line up your teaching with software/topics that we will already be going over in class. Submit your top three dates here.

Academic Integrity and the Honor Code:

As students of Skidmore College you will be held to the academic and ethical standards outlined in the Academic Integrity Handbook. You should take a moment to review this handbook, in particular the sections on Definitions and Guidelines and the Academic Integrity Checklist. It is your responsibility to become familiar with the standards of Academic Integrity at Skidmore, and violations will not be tolerated in this course.

Academic Services:

The Office of Student Academic Services (located on the first floor of the Starbuck Center) offers a wide variety of services to improve academic skills and help students take full advantage of the academic opportunities available at Skidmore. For example, current services include (but are not limited to): peer tutoring; one-on-one or small group academic support; support for students with disabilities; ESL support (including additional professional tutoring support to the Writing Center); support to some students on waivers, returning from medical leaves, and recipients of Unsatisfactory Work Notices.

If you are a student with a disability and believe you will need academic accommodation, you must formally request accommodation from Meg Hegener, Coordinator for Student Access Services. You will also need to provide documentation which verifies the existence of a disability and supports your request. For further information, please call 580-8150 or stop by the office of Student Academic Services in Starbuck Center.

Title IX Statement and Reporting Responsibilities:

Skidmore College considers sexual and gender-based misconduct to be one of the most serious violations of the values and standards of the College. Unwelcome sexual contact of any form is a violation of students' personal integrity and their right to a safe environment and therefore violates Skidmore's values. Sexual and gender-based misconduct is also prohibited by federal regulations. Skidmore College faculty are committed to supporting our students and upholding gender equity laws as outlined by Title IX. If a student chooses to confide in a member of Skidmore's faculty or staff regarding an issue of sexual or gender-based misconduct, that faculty or staff member is obligated to tell Skidmore's Title IX Coordinator or Title IX Deputy Coordinator. The Title IX Coordinator or Deputy Coordinator will assist the student in connecting with all possible resources for support and reporting both on and off campus. Identities and details will be shared only with those who need to know to support the student and to address the situation through the college's processes. If the student wishes to confide in a confidential resource, The Counseling Center Staff, Health Services, and Victim Advocates are all options available.

More information can be found at Skidmore's Sexual and Gender-Based Misconduct Resources and Information or by contacting the Title IX Coordinator or Deputy Coordinator.

COVID-19 Specific Guidelines

Hybrid Class Structure: For our first two classes we will all be remote. I will try to largely keep classes in-person, but we will occasionally need to meet over Zoom. All classes **will be recorded for asynchronous learning,** although it is my preference that all students participate synchronously (in-person or zoom if we're remote). A lab assistant should be on-call to help answer questions whether in person or over zoom.

Use of the GIS Center: Unlike in the past, the lab **will not be open to the public**. You will be on a list held by library staff at the front desk. You will need to check in en route to class and anytime you head to the lab. You do not need an appointment for either class or lab-time, although you WILL need an appointment if you choose to remain in the library after class/lab.

Office Hours: Charlie will be available for ad hoc meetings on Thursdays from 11 am - 2 pm and scheduled meetings throughout the week. Signup for meeting times (including during lab hours) with calendly.com/bettigole. Zoom will be the preferred method, but meeting in-person in the lab is occasionally possible.

Open Lab: The lab will be staffed when possible by our student lab assistants (many of whom are in this class). You must **sign up in advance** for time slots as space is limited to 10 students at a time. Schedule and signup

Lab Computers: You all have sole ownership of the semester of your lab computer. No one else will use them in-person or remote. You must always use the same computer while in-person and while logging in through Remote Desktop. This is the first time we're trying this, so please be patient as we figure it out.

NO Food or Drink: Food and drink will not be allowed in class. **Even if you need to drink some water** (and thus lower your mask), please step outside the lab.

Desks and Workstation Cleaning On your way into class, you'll sanitize your hands and grab a wipe. You'll wipe down your desk area. At the end of class, you will be dismissed four at a time, starting at the back of the class. Again, you will grab a wipe, wipe down your surfaces, and then hand-sanitize on your way out the door.

Masks Masks are mandatory. You will not be admitted upstairs without a properly fitting mask. You will be asked to leave class if you are not using a mask. To the best of your abilities, you will also maintain a six foot distance from all other students in the class.

Illness If you are feeling ill, even more so than in the past, **please do not come to class**. Participate over Zoom synchronously, or watch the recordings.

If We Have To Go Online: In the event that we need to temporarily/permanently shift the semester online, this course will shift to a mix of synchronous and asynchronous modules. Much of the material will become available as pre-recorded videos, but we will still maintain shorter, but active live Zoom sessions, paired with expanded online office/lab hours.

Seating charts and attendance: You will keep the same seats throughout the semester. Attendance is important but my primary concern at this time is your health and well-being. I ask that you only miss class when necessary (no explanation is needed). If you do need to miss class, I will work with you to the extent possible.

theSpring and Zoom Classes: I will post Zoom recordings of class to theSpring. Please give me a hard time if you notice I haven't done so right after class.

Zoom Code of Conduct: We'll chat about this together in the first day of class.