

Syllabus for GIS 426: Community Applications in GIS, Fall 2019

Instructor: Dr. Tora Johnson, GIS Director

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Office Hours (SUBJECT TO CHANGE): TBA. YOU MAY RESERVE TIMES TO MEET DURING OFFICE HOURS IN PERSON, BY PHONE, OR ONLINE AT <http://bit.ly/toraofficehours>

Class Meetings: We will arrange a weekly online class session that is workable for everyone's schedule. Those who are in the area can come to the GIS lab in Torrey 223 for the class session, and others may attend via Internet. We will record the sessions, as well.

Note: In-person or online sessions may be arranged to work with clients, collaborate with classmates, or to confer with your instructor.

IMPORTANT: All students are required to use the course website and Google Classroom for ALL course work. **We WILL NOT be using the Blackboard.**

1. Prerequisites: GIS 230 and GIS 330; or permission of instructor. Students will be expected to spend a significant amount of time in the lab or on their own computers to complete class assignments.

Students of all sections must either do course work in the UMM laboratory or own or have access to a computer that meets the minimum system requirements for ArcGIS 10.5 software: <https://desktop.arcgis.com/en/system-requirements/latest/arcgis-desktop-system-requirements.htm>. Off-campus students must have or have access to a broadband Internet connection for watching lectures, downloading and uploading data for assignments, and creating and viewing web-based maps. If you are a student at the University of Maine, you may be able to use the GIS lab in Nutting Hall for your GIS work. Contact the School of Forest Resources for details

2. Course Description: Students work together under the instructor's guidance for a single community client to perform a professional-quality service project using geographic information systems (GIS) as a decision-support and planning tool. Projects might include a town's comprehensive plan, environmental conservation planning, economic development, recreation planning, emergency response management, or similar applications where GIS can assist communities in setting priorities, making choices, or planning for the future. Students will be expected to work closely with clients and/or community residents to assess and respond to their needs, answer questions, and provide them with maps, data and documentation. In most cases, students will present their findings to the clients or their constituents. Through this work, students learn to plan, manage, execute and document a multi-faceted GIS project, skills with direct applications in the workforce. 4 credits.

3. Learning Outcomes

- Advanced ability to use geographic information system software and data to plan, manage and execute a complex project for a real-world client
- Understanding of the ways in which GIS can support community decision-making, planning and risk assessment

- Advanced ability to translate complex geographic information and concepts into maps, graphics and text that can be easily understood by the average layperson to assist in community decision-making, planning and risk assessment
- Understanding of the basic principles and skills of group facilitation and collaborative decision-making
- Ability to work in a professional manner with clients and colleagues on multiple iterations of a complex project
- Ability to assess and document uncertainty and margins of error in spatial and attribute data
- Ability to assess, troubleshoot and solve unique technical problems arising as part of a project

4. Methodology: The course will proceed in stages. Students will consult with a client(s) and instructor to get a general sense of the required work, then they will learn the basic principles and skills involved with participatory GIS, collaborative decision-making, and the uses of GIS in support of planning and decision-making. The students, instructor, and clients will meet to learn about the required project and begin the process of planning. Once the needs of the client are outlined, students may need to learn new GIS tools or methods (these are provided as part of our GIS software site licenses). Students then gather data, plan and perform analyses, create and run computer models, and make maps as needed. Two to three weeks before the end of the semester, the students present preliminary findings and/or draft maps to the client in an online session and receive feedback. Finally, they revise their analyses, models, and maps; develop complete documentation; and make a final presentation for the client.

4. Activities and Assignments: Late assignments, without PRIOR arrangement with the instructor, will receive a reduced grade.

- Tutorials: These will be assigned, as needed, to ensure that the student has the needed skills and techniques to complete the required project. Students must complete at least five Esri Virtual Campus Modules or the equivalent.
- Prospectus: Students will develop an outline of proposed work, including budget estimates, prior to commencing the project.
- Literature Review: Students, individually or in groups, will conduct a literature review and summary related to their project.
- Final Project: Each student or group will be responsible for a project that addresses the needs of our client(s) that can be addressed with GIS. They will be expected to translate that need into a specific GIS project, construct a cartographic model, and use that model to guide the data collection and analyses necessary to create an effective and professional map-based product (hard copy and digital). In addition to maps, the project will include thorough documentation of the process and relevant background, as well as a portfolio page.
- Final Project Presentation: Each student or group will create a professional presentation of their final project and deliver that presentation for the client at the end of the semester. Depending on the project, other preliminary presentations or meetings may also be required. This is the primary focus of the course and must receive a significant amount of each student's attention. The grade for this project will be assessed based on data modeling and management, cartographic and graphic quality of

maps or digital map products, thoroughness of documentation, and applicability to the problem being addressed.

5. Attendance, Class Participation and Professional Conduct Policy:

Attendance: Students are required to attend the live online sessions. If a student is unable to attend required sessions due to unavoidable circumstances, videos will be posted on the course website for viewing later. These videos are no substitute for the real-time collaboration we do in class, so students, however, and student work will suffer with multiple absences. The final project presentation will be given either in person or via Google Hangout.

Participation: Since the course centers on a group project, the success of the project depends on the consistent participation of all students, much as it would in a consulting firm or another professional setting. Also, our group discussions will comprise a large portion of the learning that will take place. So, a significant portion of your grade will be based on participation.

Professional Conduct: Students are expected to conduct themselves with the utmost professionalism, as they would in any workplace situation. To earn full credit, students must be prompt, respectful, responsible, responsive, and conscientious. They must communicate clearly and professionally. So, a significant portion of your grade will be based on professionalism.

7. Evaluation: Grades will be calculated as follows:

- a) Attendance (5%)
- b) Tutorials (10%)
- c) Prospectus (5%)
- d) Literature Review (10%)
- e) Participation/ Professionalism (20%)
- f) Final Project (40%)
- g) Presentation (10%)

8. Grading System

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A	90-92	93-97	98-100
B	80-82	83-87	88-89
C	70-72	73-77	78-79
D	60-62	63-67	68-69
F		<60	

9. Required Materials: As assigned.

10. Accommodations and Special Circumstances: The University of Maine at Machias is committed to providing reasonable accommodations for people with disabilities. If you have a disability and need accommodations please contact the appropriate person at your campus for assistance:

UMM: Jo-Ellen Scribner, Coordinator of Special Services at ummdisability@maine.edu or 207-255-1228. The office is located on the second floor in the Powers Hall Advising Center.

11. Academic dishonesty policies will be strictly enforced. Academic dishonesty is bad for everybody—it's disrespectful to the cheater's fellow students and instructor, and most important, it does a disservice to the cheater. Assignments that are flawed by academic dishonesty will receive a zero. Two incidences of academic dishonesty will result in a failing grade for the course. A special consideration when using GIS data: Students must cite the source of all spatial and attribute data provided by or derived from outside sources and must abide by data usage guidelines of the data product provider.

12. Rules and Guidelines

- Your project accounts for a significant portion of your grade. It's also a great opportunity to make professional connections that can help you in your career after you graduate. So, you will be expected to be professional in your interactions with the community partner. Remember to be polite, dress appropriately, respect rules and guidelines, be prompt, and responsible.
- Feel free to call your instructor on their cell, but please don't call before 8am or after 9pm unless it's an actual emergency. We actually WANT you to call with problems, rather than spending hours in frustration. Ultimately, it will save us all time and help you learn and progress.
- NO DISCOUNTS! Let's work together to make the lab a safe, pleasant, and functional place to work and learn. Please treat your colleagues, instructors, and staff with respect at all times. Be considerate, quiet, neat and helpful. Disruptive behavior in class or online will be grounds for removal from the class.
- Be courteous and use appropriate language in all interactions with classmates, clients, and instructors to make sure we maintain a safe and comfortable learning environment. If you use inappropriate language or bully a fellow student, you will be asked to discontinue the behavior. Repeat offenses or serious offenses will result in disciplinary action.
- DO NOT give out system passwords or software licenses to your friends, family, Uncle Jimmy, etc., even if they're really nice.

GIS Lab Guidelines:

- Students in any GIS course are welcome (though not required) to use the laboratory in Torrey 223 at UMM outside of class time for labs and assignments. The GIS lab will generally be open 10:00 am to 4:00 pm, Monday through Friday, except during class times, which are posted outside the lab. Keys are on reserve in the UMM library for access to the lab at other times for all students. Please be considerate to your classmates and return the keys promptly—you will be fined for returning the keys late.
- All of the guidelines for the campus computer labs apply to the GIS labs. In addition, the GIS labs are for GIS work only. High bandwidth uses of the labs can bog down the entire campus network, cost the school a fortune to remedy, and endanger all your hard work. Emails could introduce viruses. Using lab printers for non-GIS uses will consume ink

and paper needed for your projects. Using computers and equipment for other types of work will be grounds for removal from the class.

- Food and drinks are NOT permitted in the labs, with the sole exception of water in sealable containers. Such containers must be kept sealed and off computer tables when not in use.
- You may only open email on lab systems for GIS-related reasons WITH APPROVAL from the instructor or staff. Viruses can destroy files and render the systems unusable. Please let us know if you see anyone using the lab for these kinds of things.
- Don't allow non-GIS folks to have access to the building when it is closed.

Some Advice:

- You should plan on spending at least 5-10 hours per week doing GIS work, so please inspect your personal weekly schedule to be sure that you budget sufficient time. You will have several problem sets due in quick succession over the course of the semester. Be careful of falling behind in the class. Late assignments will get low grades, and you can leave yourself in a real jam with your project if you fall behind. If you start slipping behind, talk to your instructor as soon as you can so we can work on getting you caught up.
- We will be using software that is the industry standard for GIS. Though it is very powerful and versatile (that's why so many people use it), it is notoriously temperamental. Save often and don't get too attached to doing things in one particular way—often you will need to work around difficult problems. Breathe, be patient, and ask for help. Don't try to memorize all the buttons and steps; it's impossible. Instead use a heuristic, "trial and error" approach to solving problems.
- Communicate with your instructor, TAs, and classmates about problems you encounter or questions you have. You will save yourself lots of time and frustration if you draw on as many resources as you can to solve GIS problems (that's how we do it in the "real world"). It's not cheating as long as all your assignments are written in your own words and reflect your own work.
- Plan to spend several hours per week outside of class time to complete your assignments. It's a good idea to block out time in your schedule to spend in the lab or at your computer. That way you will be sure to devote the time and won't schedule over it. Also, expect to spend more time in the lab toward the end of the semester than is required earlier.
- "But I only need to make one map for my project," you say. "I can probably pull a couple of all-nighters during finals week to get it done." Don't count on it. Your project will involve generating new map layers, and the technology is not always cooperative—especially during finals week.
- DO make yourself comfortable in the lab whenever you are there. Feel free to adjust the positions of chairs, monitors, mice, and keyboards. You may listen to CDs or MP3s on lab machines using your own earphones (there is an earphone jack on each machine). If

everyone can agree on the music, you may play music on the speakers in the lab at a modest volume, but please avoid obscene or offensive lyrics.

- DO NOT plagiarize in your written assignments. Answers for all assignments should represent your original work and your own words. That means you should NEVER, EVER copy material in print or online or from any other source without setting it apart in quotes or by indentation and using proper and complete attribution. A quote will NEVER, EVER constitute a complete answer to an assigned question and may only be used as supporting information to your original answers.
- DO NOT plagiarize maps. Assigned maps should be designed by you and must not be made from existing templates or symbologies, except where the assignment calls for a template (group projects will often involve templates, for example). Maps made from unassigned templates will not be accepted. Typically, yellow "layer" files with the .lyr extension and map template files with the .mxt extension are not to be used to make a new map, unless your assignment specifically calls for them.

GIS 426 Community Applications of GIS Fall 2019

Dates are subject to change. Visit the course website for current info.

Wk	Week of	Topic	Reading/ Activity	Assignments
1	Aug 28	Scheduling weekly meeting time & getting to know each other.		Survey to Select Online Meeting Time: https://goo.gl/forms/Y9AyUxlYiDv9Gda42
2	Sept 4	Discuss Project Options: Intro to Critical Issues		
3	Sept 11	Meet with Client to Discuss the Project		Prospectus Assigned
4	Sept 18	Project Proposals & Budgeting		
5	Sept 25	GIS in Decision Making; Literature Searches	Relevant literature	
6	Oct 2	Decision support discussion	A peer-reviewed paper of your choice on GIS in decision support, modeling, economics	Prospectus Due; Lit Review Assigned
7	Oct 9	October Break, Oct 9 & 10 (no classes)		Tutorial Module 1 Due
		Web-Based Mapping	TBA	
8	Oct 16	Templates and Design Standardization	TBA	Tutorial Module 2 Due
9	Oct 23	Technical Topics, As Needed	TBA	Tutorial Module 3 Due; Final Project Assigned
10	Oct 30	Technical Topics, As Needed	TBA	Lit Review Due; Tutorial Model 4 Due
11	Nov 6	Technical Topics, As Needed	TBA	Tutorial Module 5 Due
12	Nov 13	Q & A/ Work with Groups	TBA	
13	Nov 27	Q & A/ Work with Groups	TBA	Draft Presentation Due
Thanksgiving Break: November 22 to 24				
14	Dec 4	Q & A/ Work with Groups	TBA	Draft Presentation Critiques Due
15	Dec 11	Practice Presentations	TBA	
16	Dec 14	Project Presentations for Client		Finals: All Projects Due by 11pm on Thursday Dec 14