GISCIENCE CAPSTONE
(GIS5950 Summer 2022)

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Class Hours: Mondays: 9:00 a.m. – 12:10 p.m.; Bellamy 320A

Office Hours: Mondays: 12:30 – 2:30 p.m. largely through Zoom but in-person meetings possible upon request

Course Overview

This is the terminal course for the Master of Science in Geographic Information Science degree (MSGIS) program. It is designated to assess students' ability to synthesize knowledge and demonstrate skills gained throughout the entire program. Students can take this course by either doing an internship *or* working on an independent research project. A mixed mode (*i.e*., research project and internship) might be possible under certain circumstances, and such an option will need to be approved by the course instructor.

Note that we are NOT able to give credits to any past-day internships or any research completed before actually taking this course. Occasionally, we might consider an internship that starts from a Spring semester but its substantial portion of the work (at least 70% of the work) extends through the immediate summer semester. Those who have a full-time or part-time job may NOT use his/her routine assignments to satisfy the course requirements. He/she will need to do something significantly different from the routine assignments in order to satisfy the course requirements. Any questions about these requirements should be directed to the course instructor.

Prerequisites

Students should have completed at least two-thirds of the course work or at least 20 credit hours for the MSGIS program before registering this course. Note that *this course is for students who are within the MSGIS Program.* Anyone who is not within this program but wishes to register the course should contact the course instructor for permission.

Course Canvas Site

CANVAS will be used to host the course materials. You are required to check that site from time to time as some important announcements may be posted there. The CANVAS address is: https://canvas.fsu.edu. You will need to use your FSU account username and password to access this site.
I will also post your grades for several components on the canvas site. Note that these are your UNWEIGHTED raw scores. You can calculate your final grade (in percentage) based on the weighting system discussed in the syllabus. For copyright reason please do not distribute anything posted on the CANVAS site to a third person.

Internship

Students are welcome to be hired (paid or unpaid) as interns at organizations where the substantial part of their duties would involve applying principles and techniques in Geographic Information Science acquired throughout the MSGIS coursework.

Objectives

- Locate, select, and communicate with local or private organizations utilizing GIScience
- Work individually or as part of a team on GIScience-related projects
- Recognize the theoretical and applied bases of data and project management, including design and planning considerations, along with data and software uptake
- Evaluate decision-making and problem solving in a realistic setting
- Appreciate how alternative techniques can determine outcomes
- Hands-on experience of GIScience software, methodology, applications, managers, and clients
- Exposure to a wider variety of GIScience proprietary software packages
- Fully document the lineage of the internship with high quality writing, graphs, maps, and statistics

Requirements

Please follow the procedures specified below:

1.   Locate an internship, apply and interview

Obtain your placement. You are advised to select positions that directly demonstrate the applicability of geographic information science. We might provide leads for obtaining an internship, but *students are responsible for locating their own internship and making arrangements for their work*. An important part of the internship experience is for students to locate their own work opportunity.

You are to be prepared to begin working on the first day of classes of the internship semester. For 6 credit hours, students must work for a total of at least 150 hours or 12.5 hours per week for a total of 12 weeks. You will also need to complete two progress reports and the final report.

2.   Give my introductory letter to your supervisor so they know how the internship works

Immediately upon obtaining your internship placement, give your supervisor a digital copy of my introductory letter posted on the canvas site. You should also keep a copy for yourself as record. This letter summarizes the requirements and expectations for the internship.

3.   Obtain a statement of duties and work schedule from your supervisor and submit to the internship instructor

Before you can register for the GIS Capstone (internship option), obtain from your supervisor a written statement of your duties and your assigned work hours with the organization. This must be written on agency or organization stationary and be signed by your supervisor. This document is important for specifying the nature of your work. This letter must also contain your start date, ending date, and the days and hours you are working. It should specify the types of GIS-related projects currently engaged by the organization. It's fine for your supervisor to prepare this letter, but we suggest that you prepare it and ask your supervisor to sign it. Florida State University requires that we fully document your work schedule.

Example of a statement of duties and work schedule can be found from the canvas site.

Note this letter should be sent to the course instructor through email.

4.   Return the internship information form
Please download a copy of the internship information form from the canvas site, fill the required fields and submit it through the canvas site.

5.   Register for GIS5950 GIScience Capstone
Before registering this course, it is expected that an internship should be secured, and formal documentation of your position has to be received. *While it is not always possible to get confirmation of an internship acceptance prior to the registration window, students are required to return the statement of duties and work schedule and the internship information form as soon as possible*. Failure to submit your work schedule and information form may result in withdrawal from the course.

6.   Instructor's virtual visit
Instructors may need to conduct a virtual visit through Zoom to the place the internship is performed. Observation and direct-feedback with the student are essential to assure quality of scholarly standards.

7.   Write two progress reports
Students submit two progress reports to the instructors detailing experience and work completed. The emphasis on these progress reports is more on evidence of activity rather than writing aesthetics. Note these reports must be prepared with a word processing software package and must be submitted via the canvas system with an appropriate file name (e.g., ProgressReport1_Your Full Name.doc). Please do *not* submit these reports through email.

8.   Write and submit the final internship paper
A final report is required that should document the entire duration of the internship; in particular, which GISci principles and techniques were analyzed/experienced and how they were applied in a computational/vocational setting. The report should be properly formatted and will be graded by the course instructor. Note the final report must be prepared with a word processing software package. The minimum page number is 14 pages (at 250 words per page) or 3,500 words, in 12- point Times New Roman font and double space, excluding tables, figures, and any other appendixes. You will also need to provide a list of the references using the citation style from the *International Journal of Geographical Information Science* (IJGIS) (https://www.tandf.co.uk/journals/authors/style/reference/tf_V.pdf). It will need to be submitted via the canvas system with an appropriate file name (e.g., FinalReport_Your Full Name.doc). Please do not submit these reports through email.

9.   Ask your supervisor to write and email a letter of evaluation to Dr. Xiaojun Yang
At the end of your internship, your supervisor will need to email a letter of evaluation of your job performance to the instructor. This is an important part of your grade, so be sure to remind your supervisor that he/she needs to send a letter of evaluation directly to the instructor. The letter should contain a SUGGESTED GRADE (using the S/U system or the A-F system) and WRITTEN COMMENTS. It should also be signed by your supervisor and be digitally printed on stationary with your employer's letterhead. Evaluation letters that do not arrive before the instructor submits grades will result in an Incomplete. Keep in mind that is it is a good idea to ask your supervisor to write a letter of recommendation that you can use in the future when you apply for jobs, schools, etc. Remember to do this before your internship ends since supervisors change jobs and may be hard to find in the future. A sample evaluation letter can be viewed from the canvas site.

Your supervisor should email the letter of evaluation to:

Dr. Xiaojun Yang
Professor Directing GISci Capstone
Department of Geography
Florida State University
Tallahassee, FL 32306
Email: xyang@fsu.edu

Research Project

An individual piece of work that will demand students formulate hypotheses, collect data, select methodologies, conduct analyses, and generate, test, and verify results. Supervision by the course instructor or another faculty member will be on offer, but the work should demonstrate the competence of the individual student. Deliverables are written reports (with possibly the reproduction of results on a computer system) to be submitted (via the canvas system) to the instructor who will grade the work.

Objectives

- Formulate hypotheses (not theories) on GISci-related data/techniques/methodologies
- Search and consult the literature, balancing various perspectives, and identifying strengths and weaknesses
- Select appropriate data and construct suitable paths of inquiry within viable methodologies
- Implement relevant GISci-related techniques and/or explore appropriate statistical analyses
- Generate preliminary results, perform rigorous testing, and verify accuracy
- If necessary, modify techniques/methodologies to improve accuracy
- Fully document the lineage of the project with high quality writing, graphs, maps, and statistics

Project Requirements

The process of completing the capstone course as a project is as follows:
- Approval needed from the instructors for the type of project. Students are advised to select projects that directly demonstrate the theoretical or computational application of geographic information science. This must include a brief overview of the plan of action, including which hypotheses/techniques/methodologies will be tested with which data;
- Students submit two progress reports the instructors detailing experience and work completed; and
- A final report is expected from the student that documents the entire project, which GISci principles and techniques they reviewed and how they were implemented in a computational setting. The report is graded by the instructor.

Final Project Report

In your project report, you must provide a project title, along with the following components:
- **Description of research problem.** The significance of your proposed research (or why this research). Why GIS/remote sensing is used for this research? What are your research objectives/problem statement? What did you intend to accomplish?
- **Literature review** (conceptual framework). This section is mandatory. You will need to provide

a brief review about the research status for the topic you choose to work on. A few previous researches should be mentioned.

- **Description of data and study area**, plus a short description of software and hardware used.
- Methodology. Technical details about your working procedural route, paying attention on specific GIS/remote sensing data and techniques used in your research.
- **Results**. You should provide a detailed analysis in relation to your research objectives.
- **Conclusions and discussion**. Summarize the main points from your analysis that answer your research question. What broad conclusion can you draw from your findings and results that address (answer) your research question? What recommendations do you have for others (For example, what would you suggest to others if they were to undertake a similar study? What would be the next steps for carrying through on the study if this is not the end all of this topic?)
- You must include a list of the **literatures** you cited (include the source of data). You should follow the IJGIS reference style (check the canvas site for the detail).

The minimum page number is 24 pages (at 250 words per page) or 6,000 words, in 12-point Times New Roman font and double space, excluding tables, figures, and any other appendixes. The report must be submitted via the canvas system.

Evaluation

System:

A	93-100	B	83-86	C	73-76	D	63-66
A-	90-92	B-	80-82	C-	70-72	D-	60-62
B+	87-89	C+	77-79	D+	67-69	F	59-0

In qualitative terms, the grade standards: **A,** Outstanding, few errors or omissions (if any); **B,** Good, only minor errors/omissions; **C**, Satisfactory, at least one major error/omission; **D**, Poor, several major errors/omissions; and **F**, Fail: many major errors/omissions.

Components:

Components	Internship Option	Research Project Option
Two progress reports	20% (10% each)	35% (17.5% each)
Final report	50%	65%
Supervisor's evaluation	30%	N/A

Course Materials

There is no required text for this text. However, students who choose the internship option are recommended to read the following text:

Tomlinson, R. 2013. *Thinking About GIS: Geographic Information System Planning for Managers* (5th). ESRI Press. 275pp.

Contacting the Instructor

Before you contact the instructor, make sure you have read all of the information in this syllabus. Students are preferred to contact the instructor through email.

Any deliverable must be submitted via the canvas system except the internship offer letter and the final evaluation letter from your supervisor. These two letters will need to be emailed to the instructor from your supervisor directly.

Academic Honor Policy

The Florida State University Academic Honor Policy outlines the University's expectations for the integrity of students' academic work, the procedures for resolving alleged violations of those expectations, and the rights and responsibilities of students and faculty members throughout the process. Students are responsible for reading the Academic Honor Policy and for living up to their pledge to ". . . be honest and truthful and . . . [to] strive for personal and institutional integrity at Florida State University."   (Florida State University Academic Honor Policy, found at http://fda.fsu.edu/academic-resources/academic-integrity-and-grievances/academic-honor-policy)

PLAGIARISM: All submitted assignments must be your own original, independent work. All sources must be properly cited (especially in the final report). Ask the instructor if you are unsure what to do. Plagiarism will result in significant grade reduction.

Academic Success

Your academic success is a top priority for Florida State University. University resources to help you succeed include tutoring centers, computer labs, counseling and health services, and services for designated groups, such as veterans and students with disabilities. The following information is not exhaustive, so please check with your advisor or the Dean of Students office to learn more.

Americans with Disabilities Act

Florida State University values diversity and inclusion; we are committed to a climate of mutual respect and full participation. Our goal is to create learning environments that are usable, equitable, inclusive, and welcoming. FSU is committed to providing reasonable accommodations for all persons with disabilities in a manner that is consistent with academic standards of the course while empowering the student to meet integral requirements of the course.

To receive academic accommodations, a student: (1) must register with and provide documentation to the Office of Accessibility Services (OAS); (2) must provide a letter from OAS to the instructor indicating the need for accommodation and what type; and (3) should communicate with the instructor, as needed, to discuss recommended accommodations. A request for a meeting may be initiated by the student or the instructor. This should be done during the first week of class.

Please note that instructors are not allowed to provide classroom accommodations to a student until appropriate verification from the Office of Accessibility Services has been provided.

This syllabus and other class materials are available in alternative format upon request. For more information about services available to FSU students with disabilities, contact the

Office of Accessibility Services

874 Traditions Way
108 Student Services Building
Florida State University
Tallahassee, FL 32306-4167
850- 644-9566 (voice)
850-644-8504 (TDD)
oas@fsu.edu
https://dsst.fsu.edu/oas

Confidential campus resources

Various centers and programs are available to assist students with navigating stressors that might impact
academic success. These include the following:
Victim Advocate Program
University Center A, Rm. 4100
(850) 644-7161
Available 24/7/365
Office Hours: M-F 8-5
https://dsst.fsu.edu/vap

Counseling and Psychological
Services
Askew Student Life Center, 2nd
floor
942 Learning Way
(850) 644-8255
https://counseling.fsu.edu/

University Health Services
Health and Wellness Center
(850) 644-6230
https://uhs.fsu.edu/

Free Tutoring from FSU

On-campus tutoring and writing assistance is available for many courses at Florida State University. For
more information, visit the Academic Center for Excellence (ACE) Tutoring Services' comprehensive list
of on-campus tutoring options - see http://ace.fsu.edu/tutoring or contact tutor@fsu.edu. High-quality
tutoring is available by appointment and on a walk-in basis. These services are offered by tutors trained to
encourage the highest level of individual academic success while upholding personal academic integrity.

Syllabus Change Policy

Except for changes that substantially affect implementation of the evaluation (grading) statement, this
syllabus is a guide for the course and is subject to change with advance notice. The instructor reserves the
right to change the content of the syllabus or course material during the course of the semester. Any
changes will be posted in the announcement section on Canvas or be notified through emails. Students
should check announcements and your FSU email account timely.

Summary of the Tentative Summer 2022 Schedule

Date	Internship Option Event/ Deliverable*	Details	Project Option Event/ Deliverable*	Details
May 9	Class meeting	Course syllabus/ Learning outcomes	Class meeting	Course syllabus/Learning outcomes
May 23	Internship Offer Letter **; Approval by the course instructor	Official letters from internship supervisors detailing acceptance of student as intern, and list of probable duties**	Research proposal	Project proposal: outline research problems/ hypotheses, methodology (study area/data/techniques), and expected results (at least 800 words excluding literatures, figures, and tables)
June 13	Progress report 1	Description of organization, and its managerial structure, goals, and objectives. How does the student's internship fit within the framework of the organization? (At least 800 words excluding literatures, figures, and tables)	Progress report 1	Literature review, details on selected techniques/ methodology, and data retrieval (at least 1,000 words excluding literatures, figures, and tables)
June 20-24	Virtual visits (individual Zoom meetings)			
July 5	Progress report 2	Description of duties and work undertaken thus far (At least 800 words excluding literatures, figures, and tables)	Progress report 2	Details on data handling, implementation of techniques/methodology, preliminary results, evidence of testing and accuracy verification if applicable (at least 1,000 words excluding literatures, figures, and tables)
July 25	Final report and Supervisor evaluation letter**	Comprehensive description of entire internship experience. Emphasis on practical applications of taught theory and techniques (at least 3500 words excluding literatures, figures, and tables) Letter of evaluation from internship supervisor**	Final project report	Comprehensive description of entire research project from research problem identification, hypothesis formulation, methodology, results, and conclusion (at least 6000 words excluding literatures, figures, and tables).

*All deliverables will need to be submitted via the canvas system except the two items marked with **.*
**An internship offer letter with a list of the duties and an evaluation letter should be emailed to the instructor directly from the internship supervisor.*