

GISCIENCE CAPSTONE

(GIS5950 Summer 2026)

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

Office Hours: Fridays: 10:00 – 11:00 a.m., through Zoom but in-person meetings possible upon request. Please contact the instructor in advance before attending office hours during the Summer semester.

Course Overview

GIS5950 is the capstone course for the Master of Science in Geographic Information Science (MSGIS) program. It is designed to assess students' ability to integrate and apply the knowledge and skills acquired throughout the program. Course requirements are typically satisfied by completing a GIS-related internship, which serves as the default option. Alternatively, students may fulfill the requirements by conducting an independent research project or under certain conditions, pursuing a hybrid approach that combines both. All non-internship options must be approved by the instructor.

*Please note that credits **cannot** be awarded for internships or research conducted prior to enrolling in this course. In some cases, internships beginning in the Spring semester may be considered, provided that a significant portion of the work (at least 90%) continues into the immediate summer semester. To receive a grade for GIS5950, students must complete a minimum of 150 internship hours by the end of the summer semester.*

Students employed full-time or part-time may not use their regular job duties to meet the course requirements. Instead, they must undertake tasks that are significantly different from their usual responsibilities. For any questions regarding these requirements, please contact the course instructor.

Prerequisites

Students should have completed at least two-thirds of the coursework, or a minimum of 20 credit hours, within the MSGIS program prior to registering for this course. Please note that this course is intended exclusively for students enrolled in the MSGIS program. Individuals outside the program who wish to enroll must obtain permission from the course instructor.

Course Canvas Site

Course materials will be hosted on CANVAS at <https://canvas.fsu.edu>. Please check the site regularly for important announcements. You will need your FSU account username and password to access the site.

Grades for various components will also be posted on CANVAS. Please note that these reflect your **UNWEIGHTED** raw scores; some may serve as a receipt only. To calculate your final percentage grade, please refer to the weighting system outlined in the syllabus. For copyright reasons, please do not distribute any materials posted on CANVAS to third parties.

Internship

Students pursue internship opportunities, either paid or unpaid, at organizations where a substantial portion of their responsibilities involves applying principles and techniques in Geographic Information Science developed through the MSGIS coursework.

Objectives

- Identify, engage with, and communicate with local/regional or private organizations utilizing GIScience
- Work individually or collaboratively on GIScience-related projects
- Understand both the theoretical and practical foundations of data and project management, including design, planning, data acquisition, spatial analytics, and software development
- Apply critical thinking to evaluate decision-making and problem-solving in realistic settings
- Recognize how alternative techniques or methodologies can influence project outcomes
- Gain hands-on experience with GIScience software, methodologies, applications, management strategies, and client interactions
- Access and explore a wider range of proprietary GIScience software packages
- Thoroughly document the internship process using high-quality writing, visuals (graphs and maps), and statistical analysis

Requirements

Please follow the procedures specified below:

1. Locate an internship, apply and interview

Secure your internship placement prior to the start of the semester. You are encouraged to select positions that directly demonstrate the applicability of geographic information science and technology. While we may provide leads to help you identify potential opportunities, *students are ultimately responsible for securing their own internship and making necessary arrangements*. Locating your own placement is considered a key component of the internship experience.

You are to be prepared to begin your internship on the first day of classes. In accordance with the University guidelines, one credit hour equates to a minimum of 1,500 minutes (25 hours) of outside-of-class work or 750 minutes of direct instruction. For GIS5950, a six-credit-hour course, students are required to complete at least **150** hours of work over the Summer semester, approximately 12.5 hours per week for 12 weeks.

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

As soon as you secure your internship placement, provide your supervisor a digital copy of my introductory letter, available on the canvas site. You should also keep a copy for your personal records. The letter outlines the requirements and expectations for the internship, *including the need for your supervisor to complete a performance evaluation at the conclusion of the internship.*

3. Obtain an internship offer letter including a statement of duties and the work schedule from your supervisor and submit it to the internship instructor

Before registering for the GIS Capstone (internship option), you should obtain a written internship offer letter from your supervisor that outlines *your duties* and *assigned work hours* with the organization. This must be printed (digitally) on official agency or organization stationery and signed by your supervisor. It should clearly detail the nature of your work, including your start and ending dates, the specific days and hours you will be working, and the types of GIS-related projects currently underway at the organization.

Although your supervisor should prepare this letter, we recommend that you review it carefully to ensure that both your specific duties and work schedule are clearly documented. Florida State University requires complete and accurate documentation of your work schedule.

Examples of duty statements and work schedules are available on the canvas site. *The letter must be sent directly to the course instructor via 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 for this course, students are expected to secure an internship and submit formal documentation of the position in the form of an offer letter. While confirmation of internship acceptance may not always be possible prior to the registration window, students must ensure that this document is sent to the course instructor in a timely manner. Additionally, *the internship information form* must be submitted as soon as possible. Failure to provide these documents may result in a 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 students are essential to assure quality of scholarly standards.

7. Write two progress reports

Students are required to submit two progress reports to the instructor, detailing their experiences and work completed. The focus of these reports is on demonstrating active engagement and thoughtful reflection. All reports must be prepared using a word processing software package and submitted through the canvas system with an appropriate file name (e.g., ProgressReport1_Your Full Name.doc). Reports submitted via email will *not* be accepted.

8. Write and submit the final internship paper

A final report is required to document the entire duration of the internship, with particular emphasis on the GISci principles and techniques explored, and their application in a computational or vocational setting. The report should also include your personal reflections and insights regarding both professional and personal growth. It must be properly formatted and will be evaluated by the course instructor based on several main elements: clarity and organization, content depth and relevance, technical accuracy, professionalism, and quality of reflection.

Note the final report must be prepared with a word processing software package. The minimum page number is 12 pages (at 250 words per page) or 3,000 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 by email.

9. Ask your supervisor to write and email a letter of evaluation to Dr. Xiaojun Yang

At the conclusion of your internship, your supervisor must email a letter evaluating your internship performance directly to the course instructor. This evaluation plays an important role in your final grade, so be sure to remind your supervisor of its importance.

The evaluation 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 the official company's letterhead. Evaluation letters that do not arrive before the instructor submits grades will result in an *Incomplete*.

Additionally, it's wise to ask your supervisor for a letter of recommendation before your internship ends, especially if you plan to apply for jobs, graduate school, or other opportunities. Keep in mind that supervisors may change positions and could be difficult to contact later.

A sample evaluation letter is available on the Canvas site for reference.

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

Students who intend to pursue this option must first receive approval from the course instructor. They are required to identify an FSU faculty member to serve as their supervisor and undertake a project that aligns closely with theories, technologies, and applications in the field of geographic information science.

The project should be an independent body of work that requires students to formulate hypotheses, collect data, select appropriate methodologies, conduct analyses, and generate, test, and verify results.

While the supervision by an FSU faculty member will be provided, the project must demonstrate the competence of the individual student. Final deliverables include written reports, and where applicable, reproduction of results using a computer system. All materials must be submitted via the Canvas system to the course instructor, who will evaluate and grade the work.

Objectives

- Formulate hypotheses (not theories) based on GIScience-related data, techniques, and methodologies
- Review and analyze the literature, balancing various perspectives while identifying strengths and limitations
- Select appropriate datasets and design viable methodological pathways for investigation
- Implement relevant GIScience techniques and/or explore appropriate statistical analyses
- Generate preliminary results, perform rigorous testing, and verify their accuracy
- Revise techniques or methodologies as needed to enhance accuracy
- Thoroughly document the project's development with high-quality writing, graphs, maps, and statistical outputs

Project Requirements

The process for completing the capstone course as a research project includes the following steps:

- **Instructor Approval:** Students must obtain approval from the instructor for the chosen type of project. Projects should clearly demonstrate the theoretical and/or applications of geographic information science and include a brief overview of the proposed plan of action specifying which hypotheses, techniques, and methodologies will be tested using which datasets.
- **Progress Reports:** Students must submit two progress reports to the instructor detailing experiences and work completed.
- **Final Report:** A comprehensive final report is required from each student. It should document the entire project, outlining the GIScience principles and techniques reviewed and how they were implemented in a computational context. The instructor will evaluate and grade the report.

Final Project Report

In your project report, include a clear project title and organize the following components under distinct headings:

- **Description of the research problem.** Explain the significance of your proposed research: Why is this study important? Why are GIS or remote sensing methods appropriate for

addressing the problem? Clearly state your research objectives and problem statement. What did you intend to accomplish?

- **Literature review (conceptual framework).** This section is mandatory. Provide a brief review of the current research status related to your topic. Mention several previous studies to contextualize your work and highlight how your research builds upon or diverges from existing literature.
- **Data and study area.** Describe the dataset(s) and geographic area used in your study. Include a short overview of the software and hardware utilized during your project.
- **Methodology.** Detail the technical procedures you followed, emphasizing the specific GIS or remote sensing data and techniques applied. Explain your workflow and any analytical methods used.
- **Results.** Present a thorough analysis of your findings, directly addressing your research objectives. Use graphs, tables, and other visuals where appropriate to support your interpretation.
- **Conclusions and discussion.** Summarize the key insights gained from your analysis. What conclusions can be drawn, and how do they answer your research question? Offer recommendations for future researchers or practitioners, including advice for conducting similar studies or suggestions for continuing this research if it remains unresolved.
- **References.** Include a complete list of the literature and data sources cited in your report. Use the IJGIS reference style as specified on the Canvas site.

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	30% (15% each)	40% (20% each)
Final report	45%	60%
Instructor's virtual visit	5%	N/A
Supervisor's evaluation	20%	N/A

Timely submission of all required documents, including progress and final reports, is essential. Late submissions may incur a penalty of up to 30% reduction in the total grade per instance. Exceptions will be granted only if a valid reason is provided in advance. Acceptable reasons include documented illness, immediate family bereavements, other documented crises, active military duty or jury duty summons, religious holy days, and official University activities.

Please note that most other reasons will not be considered valid. Submitting a valid excuse before the deadline will allow for an extension without penalties.

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.

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 graduate student paper). Please check the online version of the Academic Honor Policy (the above link). Ask the instructor if you are unsure what to do. ***Plagiarism will result in significant grade reduction.***

*Any writing work from students will be checked with **Turnitin** for similarity with existing sources. You can view the similarity report and score shortly after you submit your writing work through the canvas system. If your writing work scores higher than **15%**, you will need to edit your report to reduce the similarity and resubmit your edited report before a specific deadline. Any submissions with more than **15%** in their similarity index will **NOT** be accepted.*

Students are encouraged to use AI tools, such as ChatGPT, to explore ideas and collaborate with others. However, all AI-generated content must be cited, and its accuracy should be carefully evaluated.

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 their FSU email account timely.

Summary of the Tentative Summer 2026 Schedule (8032025)

Date	Internship Option		Project Option	
	Event/ Deliverable*	Details	Event/ Deliverable*	Details
May 11	Class meeting	Course syllabus/ Learning outcomes	Class meeting	Course syllabus/Learning outcomes
May 25	Internship Offer Letter **; Approval by the course instructor	Official letters from internship supervisors detailing acceptance of student as intern, and a list of possible duties and the work schedule**	Research proposal	Project proposal: define research problems/ hypotheses, methodology (study area/data/techniques), and expected results (at least 800 words excluding literature, figures, and tables)
June 15	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 literature, figures, and tables)	Progress report 1	Literature review, details on selected techniques/ methodology, and data retrieval (at least 1,000 words excluding literature, figures, and tables)
June 22-26	Virtual visits (individual Zoom meetings)		N/A	
July 6	Progress report 2	Description of duties and work undertaken thus far (At least 800 words excluding literature, 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 literature, figures, and tables)
July 30	Final report and Supervisor evaluation letter**	Comprehensive description of entire internship experience. Emphasis on practical applications of GIScience principles and techniques (at least 3000 words excluding literature, 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 literature, 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 the work schedule, and an evaluation letter should be emailed to the instructor directly from the internship supervisor.

***If your work involves **military** or **intelligence-related** projects, it's important to seek approval from your supervisor or organization prior to submitting your progress or final report.