

Geospatial Information Analysis Certificate Program

Introduction

Nowadays, geographic information technologies and analysis have been used in a wide range of research fields and practices, such as geography, geology, wildlife conservation, climate change, and public health. Its job market is expected to grow 22% through 2020.

Mission statement

The Geospatial Information Analysis Certificate Program offers a curriculum that covers a variety of geospatial technologies and analytic methods, such as digital mapping, geographic information system (GIS), and remotely sensed image processing. This certificate aims to develop spatial thinking ability for undergraduate students, and emphasize their hands-on experiences of geospatial analysis through lab-based applications.

This mission aligns directly with the College of Liberal Arts and Sciences Mission (<http://www.clas.ufl.edu/about/>), specifically its foremost mission:

“...Its principal mission is to lead the academic quest to understand our place in the universe, and to help shape our society and environment.” At the undergraduate level, “students acquire an intellectual foundation based on a well-rounded and comprehensive education designed for an increasingly technological and rapidly changing society.”

This mission also matches the University of Florida’s mission statement (<https://catalog.ufl.edu/ugrad/current/uf-mission/Pages/home.aspx>) by “enabling our students to lead and influence the next generation and beyond for economic, cultural and societal benefit,” and “serving the nations and the state's critical needs by contributing to a well-qualified and broadly diverse citizenry, leadership and workforce.”

Program Goals (PGs)

To students who are prepared to be geographic information analysts.

- Total number of students enrolled: 10 per academic year
- Median time to completion: 2 years
- Percent completion rate: 70%

2016-17 SLO1: Content Knowledge

Identify and describe basic concepts and techniques related to geographical information.

SLO Area: Content (UG)

Assessment method: Exams (80/100 as the passing score)

2016-17 SLO2: Critical Thinking

Apply appropriate geographic information and technologies to analyze and solve real-world spatial problems.

SLO Area: Critical Thinking (UG)

Assessment method: Class projects + Rubric (score 80% for a pass)

2016-17 SLO3: Communication

Interpret and effectively communicate information spatially and graphically.

SLO Area: Communication (UG)

Assessment method: Class project presentation + Rubric (score 80% for a pass)

Curriculum Map

Key: **Introduced** **Reinforced** **Assessed** (A1- Exams; A2- Class project & Presentation)

SLOs \ Courses	GIS3043	GIS4037	GIS4021 or GIS4001C or GIS4113 or GIS4115
Content Knowledge: Identify and describe basic concepts and techniques related to geographical information.	I, A1	I	R
Critical Thinking: Apply appropriate geographic information and technologies to analyze and solve real-world spatial problems.	I, A2	I, A2	R
Communication: Interpret and effectively communicate information spatially and graphically.	I, A2	I, A2	R

Assessment Cycle

Analysis and Interpretation: May-August

Improvement Actions: Completed by September 17

Dissemination: Completed by October 17

Year \ SLOs	2016-17	2017-18	2018-19	2019-20
Content Knowledge: Identify and describe basic concepts and techniques related to geographical information.		X		X
Critical Thinking: Apply appropriate geographic information and technologies to analyze and solve real-world spatial problems.		X		X
Communication: Interpret and effectively communicate information spatially and graphically.		X		X

Methods and Procedures

The assessment has two direct components that ties to the student learning outcomes: exams and class projects. We assess students after they have completed each attempted course.

The exams aim to evaluate students' understanding on basic concepts and techniques related to geographic information (SLO1). This assessment will be developed and administered in the course GIS3043. Exam score will be collected by the certificate coordinator for evaluation. The passing score is 80 out of 100.

The second assessment include individual final projects and presentations completed in the two required courses. Students will use the GIS analytic methods and skills obtained in a class to solve a real-world problem, from which SLO2 can be assessed. Students will also be asked to give a 10-15 minutes presentation on their class projects, from which SLO3 can be assessed. The SLO2 and SLO3 will be evaluate in different sections in a rubric. Rubric scores from both courses will be collected and averaged by the certificate coordinator for evaluation. The passing score is 80 out of 100.

SLOs	Methods	Procedures
Content Knowledge: Identify and describe basic concepts and techniques related to geographical information.	Exams	Midterm exam of GIS3043. 80/100 as the passing score.
Critical Thinking: Apply appropriate geographic information and technologies to analyze and solve real-world spatial problems.	Class project	Average scores of the critical thinking section in the rubric from the two required courses. 48/60 (80%) as the passing score
Communication: Interpret and effectively communicate information spatially and graphically.	Class project presentation	Average scores of the communication section in the rubric from the two required courses. 32/40 (80%) as the passing score

Sample Rubric Used to Measure SLOs

GIS3043 Final Project/Presentation Rubric

SLO section	Sub-section	Standard description	Score (Maximum)
Critical Thinking (60 pts)	Introduction (20 pts)		
	Background	Has the student made a compelling argument for the significance of project?	(5pts)
	Research Question	Has the student explicitly stated the question to answer in this project and the study objectives?	(10pts)
	Audience	Has the student clearly mentioned who may concern this project?	(5pts)
	Materials and Methods (40 pts)		
		Has the student described GIS data layers prepared for those objectives, how these data were found, cleaned, and managed, and what information to be derived from analyzing these data?	(10 pts)
	Methods	Has the student described methods and specific GIS techniques being used to process the data, along with the assumptions involved in methods?	(20 pts)

		Are the data analysis appropriate and accurate?	
	Flow Chart of Your Procedures	Does the flowchart accurately reflect the methods?	(10 pts)
Communi- cation (40 pts)	Results (30 pts)		
	Result presentation	Are the maps, charts, tables clear, effective and informative?	(10pts)
	Result interpretation	Has the student appropriately interpreted these results?	(5pts)
	Discussion	Is there a compelling discussion of the implications and significance of the findings?	(10pts)
	Limitations	Has the student appropriately identified limitations of the study?	(5pts)
	Presentation skill (10 pts)		
	Slide Design	Does the slide design follow the designated format?	(5pts)
Answer to Questions	Has the student effectively answered questions?	(5pts)	
Total score			(100pts)

Assessment Oversight

Name	Department Affiliation	Email Address	Phone Number
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