

MASTER OF SCIENCE IN GEOGRAPHIC INFORMATION SYSTEMS

The applied Geographic Information System (GIS) graduate program gives students the critical knowledge to succeed in the challenging world of geospatial technologies. This includes advanced classes and labs in GIS (ArcGIS, ArcGIS Pro, and ArcGIS Online); remote sensing (ERDAS IMAGINE); web-based mapping; model builder; programming; spatial databases; and spatial analysis. This program is designed to enhance an individual's knowledge in geographic information science and technology. Additionally, applications of the technology in the oil and gas industry, public health sector, environmental management, forestry, criminal justice, transportation planning, parcel mapping, local government, law enforcement, national security, and market research are featured.

The GIS master's program offers two tracks; a thesis and non-thesis option, both of which are comprised of a mix of face-to-face and online classes. The face-to-face courses are offered at Sam Houston State University's branch campus in the The Woodlands, Texas. At this time, a 100% online degree is not available.

The Master's in Geographic Information Systems (GIS) program is designed to prepare students for successful careers using geospatial analyses. Our comprehensive curriculum develops strong scientific and geospatial qualifications, advanced geospatial management and business skills, and expertise in applying geospatial technology. Graduates will learn how to leverage GIS to promote economic activity, enhance environmental sustainability, and address global challenges. This program equips students with the technical knowledge, practical skills, and industry insights necessary to make a significant impact across various sectors of the rapidly evolving GIS field.

Additional information: Reference the Program Landing Page (<https://www.shsu.edu/programs/graduate/geographic-information-systems/>) for additional information, such as cost, delivery format, contact information, or to schedule a visit.

Due Dates for Application

Final due dates for application:

Fall admission: August 1
 Spring admission: December 15
 Summer: May 15

Preferred Application dates for consideration for assistantship funding purposes:

Fall (registration opens early April):

- Application Deadline: 1/15
- Notification Deadline: 3/15

Spring (registration opens November):

- Application Deadline: 7/1
- Notification Deadline: 9/1

Applicants seeking admission to the Master of Science in Geographic Information Systems must submit the following directly to the Office of Graduate Admissions (<https://www.shsu.edu/beabearkat/graduate-journey/>):

1. Graduate Application (<http://www.shsu.edu/admissions/apply-texas.html>)
2. Application fee (<http://www.shsu.edu/dept/graduate-studies/application-fee.html>)
3. Official transcript(s) of all previous college work (Bachelor's degree required). International students must submit third party evaluation of official transcripts for degrees from universities outside the United States.
4. TOEFL scores for international students
5. Two letters of recommendation, with at least one from a faculty member in the student's major at the degree-granting institution.
6. Resume/Curriculum Vitae
7. Statement of purpose (500-1000 words) that explains:

Educational/professional background, GIS/geo-technique experience & interests, description of current and/or past involvement and employment using GIS and Remote Sensing technologies, motivation for graduate study, career and/or educational goals, expected outcome of program, as well as interest in thesis or non-thesis options.

GPA minimum of 3.0. If GPA less than 3.0, applicants must have 5 years of relevant GIS work experience.

Applicants that are accepted for admission and that are interested in pursuing a thesis are encouraged to contact a GIS faculty member in the Department of Environmental and Geosciences prior to enrolling in the program.

The degree requires successful completion of thirty-six hours of graduate credit. Students pursuing thesis would complete 30 hours of course work, plus 6 hours of thesis research.

Requirements specified in the degree plan are subject to minor modification. All graduate coursework must be approved by the GIS Graduate Program Coordinator or a graduate advisor.

Plan 1 - MS in Geographic Information Systems (Non-Thesis Option)

Code	Title	Hours
Master of Science in Geographic Information Systems (Non-thesis option)		
Specified Courses		
GEOG 5361	Geographic Information	3
GEOG 5362	GIS Principles and Application	3
GEOG 5365	Digital Image Processing	3
GEOG 5366	Cartography And Visualization	3
GEOG 5310	GIS Project Management	3
Elective Courses		
Select seven of the following: ¹		21
GEOG 5075	Selected Problems in Geography	
GEOG 5311	GIS in Law Enforcement	
GEOG 5314	GIS for Professionals	
GEOG 5315	Spatial Database	
GEOG 5363	Web GIS	
GEOG 5364	Spatial Analysis	
GEOG 5367	GIS Programming	
GEOG 5369	Internship in GIS	
GEOG 5371	Geographic Information Systems in Energy-Related Fields	
GEOG 5373	Introduction to LiDAR & Radar	
GEOG 5374	Advanced GIS Analysis	
Total Hours		36

Plan 2 - MS in Geographic Information Systems (Thesis Option)

Code	Title	Hours
Master of Science in Geographic Information Systems (Thesis option)		
Specified Courses		
GEOG 5361	Geographic Information	3
GEOG 5362	GIS Principles and Application	3
GEOG 5365	Digital Image Processing	3
GEOG 5366	Cartography And Visualization	3
GEOG 5310	GIS Project Management	3
Select five of the following electives: ¹		15
GEOG 5075	Selected Problems in Geography	
GEOG 5311	GIS in Law Enforcement	
GEOG 5314	GIS for Professionals	
GEOG 5315	Spatial Database	
GEOG 5363	Web GIS	
GEOG 5364	Spatial Analysis	
GEOG 5367	GIS Programming	
GEOG 5369	Internship in GIS	
GEOG 5371	Geographic Information Systems in Energy-Related Fields	
GEOG 5373	Introduction to LiDAR & Radar	
GEOG 5374	Advanced GIS Analysis	

Thesis		
GEOG 6398	Thesis I	3
GEOG 6099	Thesis II ²	3
Total Hours		36

¹ Students may select graduate level electives from other departments with advisor approval.

² Once enrolled in GEOG 6099, students must continuously enroll in this course until graduation.

The MS in Geographic Information Systems is designed to provide graduates with the following marketable skills:

- Hands-on technical skills in GIS and Remote Sensing softwares, viz. ArcGIS Pro, ArcGIS Online for Organizations (AGOL), ERDAS Imagine, QGIS, etc.
- Comprehensive understanding of the data models and structures used in the input, management, analysis, and output of various geographic data.
- Use Python programming language to complete geoprocessing tasks. Ability to carry out specialized tasks, such as map scripting, debugging, error handling, creating and sharing custom tools using Python scripts, and creating Python functions and classes in ArcGIS environment.
- Thorough understanding of the critical steps necessary in order to successfully implement a GIS project within an organization and ability to conduct evaluations of GIS-related technology and assess their appropriateness for a particular purpose, project or application.
- Share GIS content on the Web or across the enterprise; publish maps, imagery, and geoprocessing models on the web; create and publish feature templates for use in Web applications that support visualization, analysis, and editing of GIS resources.
- Knowledge of image acquisition, image enhancement, image restoration, color image processing, image segmentation, image compression, image recognition, image quality assessment, and statistical evaluation and change detection.
- Cartographic visualization skills and various statistical and graphical approaches for mapping and visualization techniques.