

# GRADUATE CERTIFICATE IN GEOGRAPHIC INFORMATION SYSTEMS

The Department of Environmental and Geosciences at SHSU offers a GIS Graduate Certificate to provide students with GIS skills required in today's job market. The GIS Graduate Certificate curriculum is developed with the objective of providing a solid hands-on experience in GIS applications. Students enrolled in the GIS Graduate Certificate program at SHSU will learn to use and apply technological tools and skills in their areas of expertise as well as in several major application areas. This includes use of GIS in infrastructure management, the oil and gas industry, public health, planning, and business applications. The curriculum will provide students with hands-on experience in major GIS and remote sensing vendor-specific as well as open source software packages, such as ArcGIS, ArcGIS Pro, ArcGIS Online, ERDAS IMAGINE, Python programming, Geoda, and Fusion. Students will learn:

- different spatial data structures and their essential properties;
- principles and methods for collecting spatial data;
- principles of map design and effective cartographic communication;
- methods of spatial analysis, ways spatial data can be used to investigate complex problems; and
- how to customize GIS software to meet organizational needs.

The program is intended to serve:

- recent graduates who wish to acquire technical expertise to support the knowledge gained in their undergraduate major;
- returning students who wish to acquire specialized training to meet current or future job requirements; and
- students at the graduate level who wish to demonstrate a level of mastery of the subject area by obtaining a certificate.

This Graduate Certificate is eligible to receive Title IV funding – Direct Unsubsidized Loans and Graduate PLUS loans by request. To be considered for aid, students need to submit a Free Application for Federal Student Aid (FAFSA).

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

Applicants seeking admission to pursue a Graduate Certificate in Geographic Information Systems must submit the following directly to the Office of Graduate Admissions (<https://www.shsu.edu/dept/graduate-admissions/prospective-students.html>):

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 from the baccalaureate degree granting institution
4. Resume

The graduate GIS Certificate curriculum consists of three core courses and a minimum of two electives.

Students must complete a minimum of 15 graduate credits.

Code	Title	Hours
<b>Graduate Certificate in Geographic Information Systems</b>		
<b>Core Courses</b>		
GEOG 5361 or GEOG 5366	Geographic Information Cartography And Visualization	3
GEOG 5362 or GEOG 5314	GIS Principles and Application GIS for Professionals	3
GEOG 5364	Spatial Analysis	3
<b>Electives</b>		
Select two of the following:		6
GEOG 5310	GIS Project Management	
GEOG 5311	GIS in Law Enforcement	
GEOG 5312	GIS ModelBuilder	
GEOG 5315	Spatial Database	
GEOG 5363	Web GIS	
GEOG 5365	Digital Image Processing	
GEOG 5366	Cartography And Visualization	
GEOG 5367	GIS Programming	

GEOG 5371	Geographic Information Systems in Energy-Related Fields
GEOG 5373	Introduction to LiDAR & Radar
GEOG 5374	Advanced GIS Analysis
<b>Total Hours</b>	<b>15</b>

**Note:** The GIS graduate certificate is also offered in coordination with the MS in Geographic Information Systems (<https://www.shsu.edu/programs/graduate/geographic-information-systems/>).

The Texas Higher Education Coordinating Board (THECB) marketable skills initiative is part of the state's **60x30TX plan** and was designed to help students articulate their skills to employers. Marketable skills are those valued by employers and/or graduate programs that can be applied in a variety of work or education settings and may include interpersonal, cognitive, and applied skill areas.

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

- Integrate data from a variety of sources, viz. surveys, satellite images, and digitized images, and then utilize the information to build, maintain and update databases.
- Review geospatial datasets and maps for quality.
- Create maps and graphic representations with multiple layers of information for visualization purposes.
- Analyze geospatial data to find patterns, trends and connections to guide project planning and strategy.
- Use GIS software, viz. ArcGIS Pro, QGIS, etc. for data modeling, cartographic visualization.