

GEOGRAPHIC INFORMATION SYSTEMS, CERTIFICATE

The undergraduate certificate program in Geographic Information Systems (GIS) at Saint Louis University focuses on current issues, including environmental quality, climate change, sustainability of natural and nonrenewable resources, and the impact of human activities on the environment.

Program Highlights

Students in SLU's undergraduate certificate program in Geographic Information Systems (GIS) benefit from:

- A focus on advanced remote sensing, GIS and geospatial methods
- Use of the latest image processing techniques
- Coverage of diverse applications in various disciplines
- Training with industry-leading hardware and software systems (ArcGIS, ENVI+IDL, SARscape) and open source platforms (e.g., QGIS, Boundless Desktop)
- Late afternoon or evening classes that accommodate working professionals
- Instructors with advanced degrees who work and conduct research in the field
- State-of-the-art research labs equipped with modern computing, commercial and open source software tools, various remote sensing sensors, and manned and unmanned aircrafts.

Curriculum Overview

The GIS certificate is an 18-credit program that students can pursue on a full- or part-time basis, usually completing the certificate in less than two years.

Courses cover the latest image processing techniques for optical, thermal, RADAR and LiDAR remote sensing. Students also explore geospatial methods and principles of spatial analysis, database design, cartographic representation, machine learning, computer vision, management and data-mining with integration of GIS, remote sensing and GPS.

Theory and lectures are supplemented with hands-on projects involving risk assessment and mitigation, environmental modeling, resources exploration, sustainable development, natural resource management and transportation, subterranean mapping and forest fire management.

Geospatial Intelligence (GEOINT) Certificate Program

In partnership with the United States Geospatial Intelligence Foundation (USGIF), students may simultaneously pursue the Geospatial Intelligence (GEOINT) Certificate Program.

Careers

Graduates have a very good employment outlook. According to the Geospatial Information and Technology Association, employment in this field is growing at an annual rate of almost 35%, with the commercial subsection of the market expanding by 100% each year.

Recent graduates from this program have been employed by various environmental, remote sensing and GIS companies, including Monsanto, the National Geospatial-Intelligence Agency and U.S. Geological Survey (USGS).

Admission Requirements

Applicants should have a minimum GPA of 3.00.

Students already enrolled in any undergraduate program at Saint Louis University do not need to reapply and should submit an Application for Major.

Other applicants must submit the following:

- GIS Certificate Enrollment Application
- Résumé
- Professional goal statement (500 to 800 words)

Scholarships and Financial Aid

There are two principal ways to help finance a Saint Louis University education:

- **Scholarships:** Scholarships are awarded based on academic achievement, service, leadership and financial need.
- **Financial Aid:** Financial aid is provided in the form of grants and loans, some of which require repayment.

For priority consideration for merit-based scholarships, apply for admission by Dec. 1 and complete a Free Application for Federal Student Aid (FAFSA) by March 1.

For information on other scholarships and financial aid, visit the student financial services office online at <https://www.slu.edu/financial-aid> (<https://www.slu.edu/financial-aid/>).

Requirements

| Code | Title | Credits |
|--------------------------------|--|-----------|
| Required Courses | | |
| GIS 4010 | Introduction to Geographic Information Systems ¹ | 3 |
| GIS 4040 | Introduction to Remote Sensing | 3 |
| GIS 4030 | Geospatial Data Management | 3 |
| Elective Courses | | |
| Select three of the following: | | 9 |
| GIS 4050 | Digital Image Processing | |
| GIS 4090 | Introduction to Programming for GIS and Remote Sensing | |
| GIS 4091 | Advanced Programming for GIS and Remote Sensing | |
| GIS 4092 | Machine Learning for GIS and Remote Sensing | |
| GIS 4100 | Microwave Remote Sensing: SAR Principles, Data Processing and Applications | |
| GIS 4120 | Geospatial Analytics | |
| SOC 4670 | Spatial Demography: Applied Statistics for Spatial Data | |
| BIOL 4190 | GIS in Biology | |
| Total Credits | | 18 |

¹ Students with previous GIS experience or coursework may be allowed to take an advanced elective in place of the required Introduction to GIS course.

Geospatial Intelligence (GEOINT) Certificate Program

| Code | Title | Credits |
|----------------------|--|----------------|
| GIS 4010 | Introduction to Geographic Information Systems | 3 |
| GIS 4020 | Intermediate GIS | 3 |
| GIS 4040 | Introduction to Remote Sensing | 3 |
| GIS 4960 | GIS Capstone | 3 |
| GIS Electives | Approved Electives | 6 |
| Total Credits | | 18 |

Continuation Standards

Students must have a minimum of a 2.00 GPA in all certificate courses.