Geographic Information Systems Technology

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Program Description

Geospatial technology is the unifying tool with which spatial phenomena is explored. Geospatial technology consists of Geographic Information Systems, Global Positioning Systems, and Remote Sensing. The Geographic Information Systems Technology program at Foothill College provides opportunities for career preparation and lifelong learning by providing courses that meet workforce needs. Geographic information systems are collections of computers, software applications, and personnel used to capture, store, transform, manage, analyze, and display spatial information. The associate degree provides a solid technical background in geographic information systems concepts and applications, including cartographic concepts, database design, programming, and interdisciplinary applications of the technology, and also prepares students to transfer to four-year institutions in Geospatial Science. The outcomes of the associate degree align with the U.S. Department of Labor geospatial competency model for geospatial careers. The degree also includes general education and elective courses required for graduation. The Geographic Information Systems Technology degree prepares students for entry-level technician jobs or to transfer to a four-year institution.

Learn more about the program on the **Geospatial Technology & Data Science website**.

Program Learning Outcomes

- Students will be able to apply cartographic principles of scale, resolution, projection, data management, and spatial analysis to a geographic nature using a geographic information system.
- Students will be able to plan, evaluate, and execute an original geographic information systems project.
- Students will be able to demonstrate the ability to communicate orally, in writing and graphically, the outcome of geographic information systems analysis.
- Students will be able to demonstrate an awareness of professional obligations to society, employers and funders, and individuals as outlined in the Geographic Information Systems Professional Certification Institute Code of Ethics.

Career Opportunities

Geographic information systems skills are highly desirable in agriculture, archaeology, business, cartography, government, law enforcement, marketing, environmental sciences, forestry, real estate, and urban planning.

Award Type(s)

- AS = Associate in Science Degree
- CA = Certificate of Achievement

Units Required

- Major: 42.5-43.5
- Certificate(s): 21.5-43.5

Associate Degree Requirements

English Proficiency		
Select one of the following:		
ENGL 1A	COMPOSITION & READING	5
ENGL 1AH	HONORS COMPOSITION & READING	5
ESLL 26	ADVANCED COMPOSITION & READING	5
or equivalent		
Mathematics Proficiency		
College-level math course at or above the level of Intermediate Algebra		

A minimum of 90 units is required[1] to include:

- Completion of one of the following general education patterns: Foothill General Education, CSU General Education Breadth Requirements or the Intersegmental General Education Transfer Curriculum (IGETC)
- Core courses (25.5 units)
- Support courses (17-18 units)

1 Additional elective course work may be necessary to meet the 90-unit minimum requirement for the associate degree.

Note: All courses pertaining to the major must be taken for a letter grade. In addition, a grade of "C" or better is required for all core and support courses used for the degree or certificates.

Core and Support Courses

Core Courses		
GIST 11	INTRODUCTION TO MAPPING & SPATIAL REASONING	4
or **GEOG 11**	INTRODUCTION TO MAPPING & SPATIAL REASONING	
GIST 12	INTRODUCTION TO GEOSPATIAL TECHNOLOGY	4

or **GEOG 12**	INTRODUCTION TO GEOSPATIAL TECHNOLOGY	
GIST 52	GEOSPATIAL DATA ACQUISITION & MANAGEMENT	4
GIST 53	ADVANCED GEOSPATIAL TECHNOLOGY & SPATIAL ANALYSIS	4
GIST 54A	SEMINAR IN SPECIALIZED APPLICATIONS OF GEOGRAPHIC INFORMATION SYSTEMS I	2
GIST 58	REMOTE SENSING & DIGITAL IMAGE PROCESSING	3
C S 1A	OBJECT-ORIENTED PROGRAMMING METHODOLOGIES IN JAVA	4.5
or **C S 3A**	OBJECT-ORIENTED PROGRAMMING METHODOLOGIES IN PYTHON	
Support Courses		
Select two courses from the following:		9
C S 3B	INTERMEDIATE SOFTWARE DESIGN IN PYTHON	
C S 22A	JAVASCRIPT FOR PROGRAMMERS	
C S 31A	INTRODUCTION TO DATABASE MANAGEMENT SYSTEMS	
C S 48A	DATA VISUALIZATION	
And two courses from the following:		8-9
GEOG 1	PHYSICAL GEOGRAPHY	
GEOG 2	HUMAN GEOGRAPHY	
GEOG 10	WORLD REGIONAL GEOGRAPHY	
GEOG 20	INTRODUCTION TO EARTH SCIENCE	
Total Units		**42.5-43.5**

Certificate Requirements

Certificate of Achievement in Geographic Information Systems Technology I

- Units: 21.5

GIST 11	INTRODUCTION TO MAPPING & SPATIAL REASONING	4
or **GEOG 11**	INTRODUCTION TO MAPPING & SPATIAL REASONING	
GIST 12	INTRODUCTION TO GEOSPATIAL TECHNOLOGY	4
or **GEOG 12**	INTRODUCTION TO GEOSPATIAL TECHNOLOGY	
GIST 52	GEOSPATIAL DATA ACQUISITION & MANAGEMENT	4
GIST 54A	SEMINAR IN SPECIALIZED APPLICATIONS OF GEOGRAPHIC INFORMATION SYSTEMS I	2
GIST 58	REMOTE SENSING & DIGITAL IMAGE PROCESSING	3
And one course from the following:		4.5
C S 1A	OBJECT-ORIENTED PROGRAMMING METHODOLOGIES IN JAVA	
C S 3A	OBJECT-ORIENTED PROGRAMMING METHODOLOGIES IN PYTHON	
C S 3B	INTERMEDIATE SOFTWARE DESIGN IN PYTHON	
C S 22A	JAVASCRIPT FOR PROGRAMMERS	
C S 31A	INTRODUCTION TO DATABASE MANAGEMENT SYSTEMS	
C S 48A	DATA VISUALIZATION	
Total Units		**21.5**

Certificate of Achievement in Geographic Information Systems Technology II

- Units: 30

GIST 11	INTRODUCTION TO MAPPING & SPATIAL REASONING	4
or **GEOG 11**	INTRODUCTION TO MAPPING & SPATIAL REASONING	
GIST 12	INTRODUCTION TO GEOSPATIAL TECHNOLOGY	4
or **GEOG 12**	INTRODUCTION TO GEOSPATIAL TECHNOLOGY	

GIST 52	GEOSPATIAL DATA ACQUISITION & MANAGEMENT	4
GIST 53	ADVANCED GEOSPATIAL TECHNOLOGY & SPATIAL ANALYSIS	4
GIST 54A	SEMINAR IN SPECIALIZED APPLICATIONS OF GEOGRAPHIC INFORMATION SYSTEMS I	2
GIST 58	REMOTE SENSING & DIGITAL IMAGE PROCESSING	3
And two courses from the following:		9
C S 1A	OBJECT-ORIENTED PROGRAMMING METHODOLOGIES IN JAVA	
C S 3A	OBJECT-ORIENTED PROGRAMMING METHODOLOGIES IN PYTHON	
C S 3B	INTERMEDIATE SOFTWARE DESIGN IN PYTHON	
C S 22A	JAVASCRIPT FOR PROGRAMMERS	
C S 31A	INTRODUCTION TO DATABASE MANAGEMENT SYSTEMS	
C S 48A	DATA VISUALIZATION	
Total Units		**30**

Certificate of Achievement in Geographic Information Systems Technology III

- Units: 42.5-43.5

The Certificate of Achievement in Geographic Information Systems Technology III is awarded upon completion of the core and support courses listed for the AS degree. General education courses are not required.