DEGREES, CERTIFICATES, AND TRANSFER PREPARATION INFORMATION

GEOGRAPHIC INFORMATION SYSTEMS (GIS)

Programs Offered

- Transfer Preparation

Degrees and Certificates

Certificate of Achievement

- Geospatial Technology Certificate of Achievement

Department Certificate

- Geospatial Technology Department Certificate

Certificate of Achievement Requirements

A Certificate of Achievement is granted upon successful completion of a program of study with a minimum overall grade point average (GPA) of 2.0 (C) and a **designated minimum number of units**, including:

- Completion of the area of emphasis with a grade of C or higher in each course, or with a P if the course was taken on a Pass/No Pass basis, and the P is equal to a C or higher;
- Completion of at least 50% of area of emphasis units at Santa Monica College. Department Chairs have the discretion to waive the 50% minimum units required at SMC to meet the major or area of emphasis. All major coursework must be completed with a "C" or better grade.

Department Certificate Requirements

A Department Certificate is granted upon successful completion of a program of study with a **designated minimum number of units**, including:

- Completion of the area of emphasis with a grade of C or higher in each course, or with a P if the course was taken on a Pass/No Pass basis, and the P is equal to a C or higher;
- Completion of at least 50% of area of emphasis units at Santa Monica College. Department Chairs have the discretion to waive the 50% minimum units required at SMC to meet the major or area of emphasis. All major coursework must be completed with a "C" or better grade.

Note: Department Certificates are not noted on student transcripts. Students must submit a petition to the relevant academic department to be awarded a Department Certificate.

Career Opportunities

Over 80% of data used for decision-making in government, business, and industry has a spatial component (i.e. geospatial data). New areas of rapid growth are in criminal justice, homeland security, marketing, retail site location, resource allocation, banking, healthcare, planning, disease control, insurance, real estate, and disaster preparedness, management, and response. Most local, state, and federal government agencies use geospatial technologies and maintain a staff of GIS technicians, geospatial analysts, and GIS professionals. Geospatial technologies are also commonly used in the private sector by businesses, planners, architects, foresters, geologists, environmental scientists, archaeologists, real estate professionals, marketers, sociologists, and bankers. The expansion of jobs using geospatial technologies is anticipated to continue for many years to come.

Transfer Preparation

Many colleges/universities offer baccalaureate degrees in this field. Students planning to transfer to a four-year college or university should complete the lower-division major requirements and the general education pattern for the specific transfer institution. SMC has articulation agreements with the many UC and CSU campuses, as well as several private and out-of-state institutions.

Exact major requirements for UC and CSU campuses can be found online at *assist.org*.

A listing of private, nonprofit California colleges and universities can be found online at *aiccu.edu*. For articulation agreements between SMC and some of these institutions see *smc.edu/articulation*.

Geospatial Technology, Certificate of Achievement

Geospatial technologies, including Geographic Information Systems (GIS), Remote Sensing (RS), Global Positioning System (GPS) and Digital Cartography, are used to capture, store, manage, analyze and visualize geospatial information related to locations on Earth's surface. These technologies are used to combine various types of geospatial information in a digital environment and are widely used in our daily life, government agencies, in almost every industry. Through this program students will develop an understanding of the theoretical underpinnings of geospatial technologies and gain the skills needed to construct high-quality applications.

Program Learning Outcomes: Upon completion of the program, students will demonstrate proficiency in spatial data collection and manipulation, spatial data management, spatial analysis and spatial modeling using geospatial technologies. Upon completion of the program, students will apply cartographic principles of scale, resolution, projection, and data management to solve a geographic problem using geospatial technologies. Upon completion of the program, students will execute an original GIS project under the supervision of a faculty or professional mentor and demonstrate the ability to communicate project outcomes orally, in writing and graphically.

Area of Emphasis: (18-19 units)

Required Courses: (15 units)

GEOG 20, Introduction to Geographic Information Systems *(same as GIS 20)* (3)
or
GEOG 23, Intermediate Geographic Information System *(same as GIS 23)* (3)

GEOG 25, Introduction to Cartography *(same as GIS 25)* (3)
or
GEOG 26, Introduction to Remote Sensing *(same as GIS 26)* (3)

GIS 27, Applications in Geographic Information Systems (3)

Application Courses; select 1 from the course block: (3-4 units)

ENVRN 7, Introduction to Environmental Studies *(same as GEOG 7)* (2)
ERTHSC 88A, Independent Studies in Earth Science (3)
GEOG 1, Physical Geography (3)
GEOG 2, Introduction To Human Geography (3)
GEOG 3, Weather and Climate (3)
GEOG 5, Physical Geography with Lab (4)
GEOG 7, Introduction to Environmental Studies *(same as ENVRN 7)* (3)

GEOG 8, Introduction to Urban Studies *(same as URBAN 8)* (3)
GEOG 10, Living in a Hazardous Environment (3)
GEOG 11, World Geography: Introduction to Global Studies *(same as GLOBAL 11)* (3)
GEOG 14, Geography of California (3)
GIS 19, Geographic Information Systems for Business (3)
GIS 21, Geography Information Systems for Law Enforcement (3)
GIS 22, Geographic Information Systems for Disaster Management (3)
GLOBAL 11, World Geography: Introduction to Global Studies *(same as GEOG 11)* (3)
URBAN 8, Introduction to Urban Studies *(same as GEOG 8)* (3)

Geospatial Technology, Department Certificate

Geospatial technologies — including geographic information systems (GIS), remote sensing (RS), global positioning system (GPS), and digital cartography — are used to capture, store, manage, analyze, and visualize geospatial information related to locations on Earth's surface. These technologies are used to combine various types of geospatial information in a digital environment, and are widely used in our daily life, government agencies, and in almost every industry. Through this program, students will develop an understanding of the theoretical underpinnings of geospatial technologies, and gain the skills needed to construct high-quality applications.

PLEASE NOTE: Students must petition the Earth Sciences department to obtain a Department Certificate in Geospatial Technology.

Program Learning Outcomes: Upon completion of the program, students will apply cartographic principles of scale, resolution, projection, and data management to solve a geographic problem using geospatial technologies. Students will demonstrate proficiency in spatial data collection and manipulation, spatial data management, spatial analysis, and spatial modeling using geospatial technologies. Students will also execute an original GIS project under the supervision of a faculty or professional mentor, and demonstrate the ability to communicate project outcomes orally, in writing, and graphically.

Area of Emphasis: (15 units)

Required Courses: (15 units)

GEOG 20, Introduction to Geographic Information Systems *(same as GIS 20)* (3)
or
GIS 20, Introduction to Geographic Information Systems *(same as GEOG 20)* (3)

GEOG 23, Intermediate Geographic Information System *(same as GIS 23)* (3)
or
GIS 23, Intermediate Geographic Information System *(same as GEOG 23)* (3)

GEOG 25, Introduction to Cartography *(same as GIS 25)* (3)
or
GIS 25, Introduction to Cartography *(same as GEOG 25)* (3)

GEOG 26, Introduction to Remote Sensing *(same as GIS 26)* (3)
or
GIS 26, Introduction to Remote Sensing *(same as GEOG 26)* (3)

GIS 27, Applications in Geographic Information Systems (3)