

Geographic Information Systems Undergraduate Certificate

The Undergraduate Certificate in Geographic Information Systems introduces students to broad concepts, technologies, tools, and techniques related to the gathering and sharing of geographic data across various disciplines. Students will learn how to acquire geographic information from a variety of sources; manage, interpret, and present geospatial data for a given purpose; and how to use geographic information system (GIS) software for storage, manipulation, and analysis of geospatial data.

Core

SOC 2501	Introduction to Geographic Information Systems and Sciences	3
SOC 4501	Advanced Geographic Information Systems and Sciences	3
CMP SCI 3990	Undergraduate Internship	1

Electives

Choose one course from the following list of methods/visualization electives 3

GEOG 1001	Introduction to Geography (MOTR GEOG 101)	
HONORS 2002	Topics in Information Literacy ^{2,3}	
SCMA 3331	Data Visualization for Business Applications ²	
POL SCI 3350	Political Parties and Elections ²	
CMP SCI 3411	Introduction to Data Visualization ²	
SOC 3501	Social Mapping for Change	
INFSYS 3830	Data Programming	
CMP SCI 4420	Introduction to Digital Image Processing and Computer Vision ²	

Choose one course from the following list of broadening electives 3

GEOG 1002	World Regions (MOTR GEOG 101)	
GEOG 2001	Cultural Geography	
HONORS 2020	Inquiries in the Fine and Performing Arts ³	
HONORS 2040	Inquiries In Mathematics And Computing ^{2,3}	
POL SCI 2600	The Geography of Governance ²	
HIST 4142	Inquiries in U.S. History ^{2,3}	
ECON 4160	Geospatial Analysis in the Social Sciences ²	
CMP SCI 4200	Python for Scientific Computing and Data Science ²	
PHIL 4460	Topics in Logic ^{2,3}	
SOC WK 4755	Introduction to Poverty, Human Rights, and Social Justice ²	
MGMT 5634	Sustainability Management ²	

Total Hours 13

Other UMSL courses and courses from other UM campuses, through ICCS or other formats, may be included as electives with prior approval of the program coordinator.

- ¹ Must be approved by the program coordinator
- ² This course has departmental prerequisites, please consult an advisor for more information
- ³ Only specific section offerings (those with formalized GIS content) may count toward certificate and must be approved by program director

Learning Outcomes

Upon completion of the program, certificate earners will be able to:

- Explain the important role of the geospatial dimension in data analysis and presentation
- Apply foundational concepts and methods of acquisition, management, visualization, and analysis of geographic data and apply these skills to problems in various disciplines
- Use GIS tools and methods to create maps, images, and other media to communicate in a meaningful way to others
- Solve GIS focused problems independently and as a member of a team