

Geospatial and Environmental Informatics (GSEI)

The Geospatial and Environmental Informatics (GSEI) degree prepares students to assess and make decisions about our environment using computer science and technologies such as geographic information systems (GIS), the global positioning system (GPS), satellite-based remote sensing, AI and machine learning, and drone imaging. Combining these tools with information technology, spatial science, data analysis, natural resources and ecological modeling, students will develop the ability to apply these tools for the sustainable management of natural resources and other decision-making related to land use and our environment.

The learning objectives of the program are to provide students with:

1. Technical skills in geospatial database design and analysis and the arrangement of things in space.
2. Ability to read, interpret, and generate maps and other geographic representations and extract, analyze, and present information from a spatial perspective.
3. Ability to think in spatial terms to explain what has occurred in the past as well as using geographic principles to understand the present and plan for the future.
4. Ability to apply critical thinking, problem-solving, and communication skills to solve problems in a professional setting.
5. Ability to synthesize and critique the impact and how we perceive the earth's environment using location-based services, global positioning systems (GPS), geographic information systems (GIS), remote sensing (RS), virtual globes, and web-based mapping.

Freshman

Fall	Hours	Spring	Hours
ENGL 1100 English Composition I		3 ENGL 1120 English Composition II	3
GEOG 1010 Global Geography		3 MATH 1610 Calculus I	4
Restricted Core Science Elective ²		4 Core History or Social Science ¹	3
GSEI 1200 Introduction to Geospatial Technology		3 Restricted Core Science Elective II ²	4
Free Elective		3	
	16		14

Sophomore

Fall	Hours	Spring	Hours
STAT 2510 Statistics for Biological and Health Sciences		3 GSEI 2070 Introduction to Environmental Informatics	3
History Core ¹		3 NATR 2020 Natural Resources Field Methods	3
Core Literature ¹		3 Core Literature or Humanities ¹	3
Free Elective		3 GEOG 1030 Global Systems Land/Water	4
Restricted Core Social Science Elective ³		3 Free Elective	2
	15		15

Junior

Fall	Hours	Spring	Hours
FORY 5470 GIS Applications in Natural Resources		2 FORY 5480 GIS Database Design and Analysis	2
GEOG 5820 Aerial Photography and Remote Sensing		4 FORY 4230 Forest Ecology	3
ENGL 3040 Technical Writing		3 Core Fine Arts	3
COMM 1000 Public Speaking		3 WILD 5750 Analysis for Environmental and Health Sciences	4

GSEI 5800 Python Programming for the Environment ⁵		4 NATR 4240 Watershed Management	3
		16	15
Senior			
Fall	Hours	Spring	Hours
GSEI 5360 Environmental Modeling		3 FOWS 5270 Natural Resource Policy	3
GSEI 5430 Applications in Environmental Informatics		3 Free Elective	2
GEOG 5880 Advanced Geographic Information Systems		3 GSEI 5150 Spatial Statistics for Natural Resources	3
Restricted Applications Elective ⁴		3 Restricted Applications Elective⁴	6
STAT 4000 Introduction to Data Science		3	
		15	14
Total Hours: 120			

¹ Students must take a two-semester sequence in either literature or history.

² Students must take an 8-credit sequence with labs in Biology (BIOL 1020/BIOL 1021/BIOL 1030/BIOL 1031), Physics (PHYS 1500/PHYS 1510), or Chemistry (CHEM 1030/CHEM 1031/CHEM 1040/CHEM 1041).

³ Students must take one of the following courses: ECON 2020, NATR 2050, or SUST 2000.

⁴ See College for list of possible courses that satisfy the Restricted Applications Elective.

⁵ Students may also take COMP 1210, STAT 5210, or GEOG 5890. If students take one of these courses, then they make take one additional hour of free elective.

Courses in bold are major courses and must be completed with a cumulative GPA of 2.0 or better.