

# GEOSPATIAL INFORMATION SCIENCE-ADVANCED, GRADUATE CERTIFICATE

## Program Description

Geospatial Information Science is a research field that utilizes specialized computer hardware, software, and procedures for presentation and analysis of all types of natural and social science data referenced (mapped) to the earth's surface. Students who complete the requirements for the Advanced certificate should be able to:

- perform advanced GIScience techniques using vector, raster, and remote sensing data;
- apply GIScience to display, support, and analyze research questions in the social or natural sciences;
- collect and create GIScience data using various technologies and software;
- recognize and apply computer science concepts such as data collection, representation, queries, and storage; and
- enter GIScience employment or continue GIScience work at the doctoral level.

## Oversight of the GIScience Certificate Program

The interdisciplinary GIScience Curriculum Committee oversees the program, approves Special Topics and Independent Study courses, and approves changes to the program. Additional GIScience faculty members and administrative stakeholders may be added to the committee by consensus of the members or at the request of their dean. As members leave university service, they may be replaced at the discretion of their department.

Current members and their departments/colleges are:

- Anne Axel, Biological Sciences/COS
- Richard Begley, Engineering/CITE
- David Cartwright, Computer and Information Technology/COS
- Jeffrey Huffman, Engineering/CITE
- Tom Jones, Natural Resources and the Environment/COS
- Min Kook Kim, Natural Resources and the Environment/COS
- Jamie Leonard, Geography/COLA, Director of Undergraduate and Graduate Certificate Programs
- Brian Morgan, Computer and Information Technology/COS
- Bill Niemann, Geology/COS
- Mitchell Scharman, Geology/COS
- Jayme Waldron, Biological Sciences/COS
- Anita Walz, Geography/COLA
- Jamie Wolfe, CITE/CEGAS

## Administrative Home

James Leonard, Ph.D., Geography Department, College of Liberal Arts, is the director of the program and can provide students with information, advising, forms, and other assistance.

## Admission Requirements

Students may pursue the graduate certificate while enrolled in a master's program **or** as a certificate-only student.

- Applicants interested in the certificate-only program should apply for admission to Marshall University as a Certificate/Professional Development student and select on the application form the Certificate in Geospatial Information Science - Advanced.
- Students already enrolled in a master's degree program should submit to the Graduate College a Secondary Program Request form at [www.marshall.edu/graduate](http://www.marshall.edu/graduate) (<http://www.marshall.edu/graduate/>).

Applicants to the Graduate GIScience Certificate-Advanced program must have completed the Certificate in Geospatial Information Science-Basic before entry into the program. Students transferring from other institutions or Marshall graduates with the equivalent of the Basic certificate may enroll for the Advanced certificate.

GIScience credits can count toward a master's degree in several departments such as Geography, Physical Science, Environmental Sciences, Technology Management, and Information Technology. Please see an advisor in the appropriate department.

## Program Requirements

An Advanced graduate certificate in GIScience consists of a minimum of 12 hours in courses designated as GIScience courses beyond the requirement for the GIScience Certificate-Basic. Students must have a B (3.0) average in all their GIScience courses and no grade below a C (2.0) in their GIScience courses to earn the certificate.

## Plan of Study

Code	Title	Credit Hours
<b>Required Courses</b>		
<i>Advanced Analysis Course</i>		
Select at least one of the following: <sup>1</sup>		4
GEO 529	Princ of GIS 2-Vector Analysis	
GEO 530	GIS-Raster Analysis	
<i>Remote Sensing Course</i>		
Select at least one of the following: <sup>2</sup>		4
GEO 531	Remote Sensing & Photogram	
BSC/PS 510	Remote Sensing/GIS Appl	
BSC/PS 511	Dgtl Image Proc/GIS Model	
Special Topics in Remote Sensing course		
<i>Application Course, Research Methods or Internship</i>		
Select at least one (minimum of 3 credit hours) of the following:		4
GEO 631	Applied GIS Projects	
GEO 690	Internship in Geography (must be GIScience approved in advance)	

### GIScience Electives

Select electives from the following:

BSC/PS 510	Remote Sensing/GIS Appl
BSC/PS 511	Dgtl Image Proc/GIS Model
GEO 529	Princ of GIS 2-Vector Analysis
GEO 530	GIS-Raster Analysis
GEO 531	Remote Sensing & Photogram
GEO 532	Enterprise GIS
GEO 533	GPS & Mobile Geospatial T
GEO 540	Spatial Statistics and GIS
GEO 631	Applied GIS Projects
GEO 690	Internship in Geography (must be GIScience approved by advisor in advance)
IS 645	Geographic Information Systems
Special Topics course as approved in advance by the GIScience Curriculum Committee	
Independent Study courses as approved by advisor in advance	
Total Credit Hours	12

- <sup>1</sup> This requirement is waived if a student completed one of these courses as part of the Certificate in Geospatial Information Science – Basic, an undergraduate equivalent of one of these courses, or an equivalent advanced analysis course from another institution.
- <sup>2</sup> This requirement is waived if a student completed one of these courses as part of the Certificate in Geospatial Information Science – Basic, an undergraduate equivalent of one of these courses, or an equivalent Remote Sensing course from another institution.