Request for Change of a Graduate Certificate

Geospatial Information Science Certificate – Advanced

Rationale for the changes:

*Adjust the list of choices for the required applications/research methods/internship:* Added a new course from Natural Resources and Recreation Management; deleted a course that hasn’t been offered in years.

*Adjust the list of GIScience electives:* Added new GIS courses from Geography, Natural Resources and Recreation Management, and Physical Science.

*Adjust the members of the GIScience Curriculum Committee:* Faculty and staff come and go.

*Add information about the Administrative Home of the program:* Directs students, faculty and staff to the director of the program for more information.

New description based on the proposed changes:

Geospatial Information Science Certificate – Advanced

**Admission Requirements**

Students can 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 ~~Graduate Admissions~~ the Graduate College a Secondary Program Request form at [www.marshall.edu/graduate/](http://www.marshall.edu/graduate/). [Link changed.]

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**

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 softwares;
* 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.

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.

**Required courses**

* At least one advanced analysis course: GEO 529 Principles of GIS 2 - Vector Analysis (4 hrs.) or GEO 530 GIS Raster Analysis (4 hrs.). 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.
* At least one remote sensing course: GEO531 Principles of Remote Sensing and Photogrammetry (3 hours), BSC/PS510 Remote Sensing with GIS Applications (4 hours), BSC 511/PS 511 Digital Image Processing and GIS Modeling (4 hrs.), NRRM533 GIS and Remote Sensing for Natural Resource Management (3 hrs.), or a Special Topics remote sensing course. 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.
* At least one applications course, research methods, or internship (minimum three credit hours): GEO 631 Advanced GIS Projects, GEO 690 Internship (must be GIScience approved by the student’s advisor in advance), ~~IS 645 Geographic Information Systems~~, or NRRM602 GIS/RS Research Method in NRRM.

**GIScience electives**

* BSC 510/PS 510 Remote Sensing with GIS Applications (4 credit hours)
* BSC 511/PS 511 Digital Image Processing and GIS Modeling (4 hrs.)
* GEO 529 Principles of GIS 2 – Vector Analysis (4 hrs.)
* GEO 530 ~~Intermediate~~ GIS – Raster Analysis (4 hrs.)
* GEO 531 Principles of Remote Sensing and Photogrammetry (3 hrs.)
* GEO 532 Enterprise GIS (3 hrs.)
* GEO 533 GPS and Mobile Geospatial Technologies (3 hrs.)
* GEO 540 Spatial Statistics and GIS (4 hrs.)
* GEO 631 Advanced GIS Projects (3 hrs.)
* GEO 690 Internship (1-6 hrs.; must be GIScience approved by the student’s advisor in advance ~~to qualify~~)
* IS 645 Geographic Information Systems (3 hrs.)
* NRRM533 GIS and Remote Sensing for Natural Resource Management (3 hrs.)
* NRRM602 GIS/RS Research Method in NRRM (3 hrs.)
* PS 570 Practicum (4 hrs.; must be GIScience approved by the student’s advisor in advance)
* PS 670 Advanced Practicum (4 hrs; must be GIScience approved by the student’s advisor in advance)
* Special Topics courses as approved in advance by the GIScience Curriculum Committee
* Independent Study courses as approved by the ~~GIScience Curriculum Committee~~ student’s advisor in advance

**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, Enginering/CITE
* David Cartwright, ISAT/COS
* Jan Fox, Senior VP for Information Technology/CIO
* Jeffrey Huffman, Engineering/CITE
* Tom Jones, Integrated Science and Technology/COS
* Min Kook Kim, Integrated Science and Technology/COS
* Jamie Leonard, Geography/COLA, Director of Undergraduate and Graduate Certificate Programs and Undergraduate Minor
* Brian Morgan, Integrated Science and Technology/COS
* Andrew Nichols, Engineering/CITE
* Bill Niemann, Geology/COS
* Mitchell Scharman, Geology/COS
* Jonathan Thompson, Computer Science/CITE
* 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.