Curriculum Requirements

**Required Course:**

- Geography 385 GIS Primer
- Geography 475 Intermediate GIS

**Choose three of the following elective courses:**

- Geography 390 Cartographic Design and Geographic Visualization
- Geography 402 GIS Skills Development
- Geography 407/507 Spatial Analysis & Modeling
- Geography 412 Socioeconomic Apps in GIS
- Geography 424/524 Hydrologic Application of GIS & Remote Sensing
- Geography 479 GIS Programming
- Geography 483/583 Remote Sensing/ GIS Integration
- Geography 487/587 Topics in Geospatial Analysis
- LARC 395 GIS Applications in Land Planning 1
- FOR/NRS 375 Intro to Spatial Analysis for Natural Resources
- REM407 GIS Applications in Fire Ecology and Management

Curriculum requires 15 credits

Why the Certificate, Who it applies too, and the Design:

- The opportunity to enhance your educational foundation in geographical information systems (GIS) or to strengthen your GIS credentials is available through the GIS Certificate.
- Both Undergraduate and Graduate students in any program can earn the certificate.
- The curriculum is designed to inform students about the basic understanding of techniques and application potential of GIS. It is intended for current University of Idaho students and recent graduates in non-GIS majors, and professionals interested in retraining or upgrading their skills in GIS.

Declaring the Certificate

- To officially declare the certificate, fill out the Change of Curriculum Form. The department chair signs the form and then you turn it into the Office of the Registrar.
- Forms are also available in the Department of Geography main office McClure 201.

www.uidaho.edu/sci/geography
Ph: 208-885-6216

It is U of I policy to prohibit and eliminate discrimination on the basis of race, color, national origin, religion, sex, sexual orientation and gender identity/expression, age, disability, or status as a Vietnam-era veteran. This policy applies to all programs, services, and facilities, and includes, but is not limited to, applications, admissions, access to programs and services, and employment.
Certificate in Geographic Information Systems

Course Descriptions

Two Required Courses:

GEOG 385, GIS Primer (3cr)
Intro to basic concepts and applications geographic information systems (GIS), lab exercises on PC-based GIS packages. Two lectures and 2 hours of lab a week. Prereq: Basic knowledge of PC-based operating system. Work experience, coursework elsewhere, or ESRI training may be approved as substitute. Contact dept for details.

GEOG 475, Intermediate GIS (3cr)
New course description: Course covers in-depth geographic information systems models and applications. Topics include network analysis, watershed analysis, spatial interpolation, terrain mapping and analysis, 3D visualization, and GIS modeling. Students develop spatial analysis and modeling skills to solve real-world problems. Prereqs: GEOG 385 or equivalent and STAT 251.

Choose 9 credits from these electives:

GEOG 390, Cartographic Design & Geographic Visualization (3cr)
Map projections, map generalization, cartographic design, map symbology, and typographic; statistical, isarithmic and multivariate mapping, static versus dynamic mapping; interactive and internet mapping; cartographic animation; 2 hrs of lab/wk. Prereq: GEOG 385 and STAT 251.

GEOG 479, GIS Programming (3cr)
An introduction to the use of programming languages, such as Python, with standard ArcGIS concepts. Prereq: GEOG 475 or 390 as either pre- or co-requisite, i.e., either course prior or concurrently.

GEOG 483/583, Remote Sensing/GIS Integration (3cr)
Concepts and tools for the processing, analysis, and interpretation of digital images from satellite and aircraft-based sensors. The integration of remotely-sensed data and the other spatial data types within Geographic Information Systems. Additional assignments and exams required for graduate credit. Prereq: FOR 472 or equivalent, and STAT 251. Coreq: GEOG 385 or equivalent.

GEOG 507, Spatial Analysis & Modeling (3cr)
Point Pattern Analysis, Nearest Neighbor, K-Functions, Quadrat Analysis, Spatial Autocorrelation (Moran’s I, Geary’s ratio, General G-statistics), Order Neighbor Analysis, Spatial Regression (creating prediction models, improving accuracy, validating and working with spatial weighted lags), Spatial Sampling Techniques/Methods, Spatial Dispersion, Gravity Models, Modeling in GIS, Model Builder, Weighing Layers. Prereq: STAT 431.

GEOG 412, Socioeconomic Applications of GIS (3cr)
Current topics and GIS applications in social sciences literature including urban planning, transportation, environmental justice, public health, retail and business location, and others. Integration of GIS and data analytics; hands-on experience in applying GIS and different types of spatial (big) data to address some research and practical questions in the context of social sciences.

With approval of the GIS Curriculum Committee, up to six credits of GIS-related coursework from other institutions or other UI departments may be substituted for one of these courses.

Directed studies in specialized GIS-related topics and internships may qualify for eligibility. Please contact the department to discuss.

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