University of Idaho College of Science

Certificate in Geographic Information Systems

15 Credits

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 424/524, Hydrologic Application of GIS & Remote Sensing (3cr) On-line – Fall semesters
Concepts of area-based hydrologic modeling and assessment and the various types of spatially-distributed information commonly used in these activities, such as digital elevation models, land cover, soils and meteorologic data. Hands-on experience in manipulating these types of data sets for hydrologic and natural resource applications. Hydrology course background required for 500-level section. Pre-req: GEOG 385 or equivalent.

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, Spatial Diffusion, Gravity Models, Modeling in GIS, Model Builder, Weighing Layers. Prereq: STAT 401.

GEOG 587, Advanced Topics in Remote Sensing (3cr)
Current topics and applications in remote sensing literature including radar, thermal and hyperspectral remote sensing, sensor advances, airborne platforms, advanced classification and segregation techniques, large area pattern analysis, time series and trends, and advances in both terrestrial and non-terrestrial approaches, models, and applications.

With approval of the GIS Curriculum Committee, up to three 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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