Geographic Information Systems Certificate

www.Geology.Pitt.edu
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Overview

The Department of Geology and Environmental Science offers a certificate in geographic information systems (GIS). GIS is a computer-based system that accommodates virtually any type of information about features that are referenced by geographical location. For example, a GIS database may include both location and attribute data, providing a spatial visualization capability for analyzing descriptive characteristics about geographical features, both natural and man-made. One of the most important benefits of GIS analysis is the ability to spatially interrelate multiple types of information stemming from a range of sources. Such computational manipulation of geographic data has become increasingly important in many areas of science, government, and industry. Students who demonstrate experience with computers in general, and GIS/image processing in particular, are at a distinct advantage when looking for jobs in geology, environmental science, city and regional planning, and engineering. This certificate is designed to provide students with the knowledge and skills needed for immediate success in GIS-related jobs.

GIS topics covered include the nature of geographic data, map projections, raster images, the basic elements of a GIS database, sources of data, and training in the Arc/Info software package. Students also have the option of focusing on remote sensing theory and applications. RS topics include image analysis and processing, field validation of satellite and airborne datasets, GPS training, and the use of software packages such as ENVI, Erdas Imagine, ERMapper, and Trimble's Pathfinder Office.

Required courses

Only University of Pittsburgh undergraduates pursuing a degree are eligible to enroll in this certificate program, which requires 16 credits to complete. The department recommends that that undergraduates begin no later than their junior year.

Core courses

GEOL 1445/GEOL 2449 GIS, GPS, and Computer Methods
GEOL 1460 Introduction to Remote Sensing

Elective courses

Students must select two elective courses that have relevance to their major or employment goals. Many departments offer appropriate courses. Students may apply up to 18 credits of non-Dietrich School coursework to their undergraduate degrees. Recommended electives include the following courses.

GEOL 0820 Natural Disasters
GEOL 1030 Atmosphere, Oceans, and Climate
GEOL 1060 Geomorphology
GEOL 1446 Advanced Geographic Information Systems
GEOL 1960 Field Camp
GEOL 2460 Applied Remote Sensing and GPS Techniques
GEOL 2640 Advanced Geohazards and Risk Management
BIOSC 1390 Field Techniques in Ecology and Conservation
INFSCI 1022 Database Management Systems

Capstone course

GEOL 1901 Independent Study*

* Students should work with faculty in their primary area of interest to define and develop the capstone project. It must use GIS and/or RS as a major tool and result in a published report, map, or media that describes the results of the research.

Grade Requirements

A minimum grade of C is required in each course required for this certificate.

Satisfactory/No Credit Option

No course that counts toward the certificate can be taken on an S/NC basis unless the student received special permission from the certificate advisor.

Students interested in the certificate should contact the certificate advisor, Bill Harbert (Harbert@Pitt.edu, SRCC 504, 412-624-8874) for more information about the program.