

UC 8807 05F

Submission to the Curriculum Committee from the Department of Geosciences, Fall 2004.

APPROVED MAR 2 2 2006

Preamble

For several years the Department has taught courses, at the graduate level in Geographic Information Systems, covering both methodology and applications. These courses have been well attended with students from a variety of backgrounds. The Department feels there is a demonstrated need for this type of training and that we have the competence to provide a complementary set of relevant courses. Our proposal therefore is to provide a framework of courses that will lead to a certification in this important and topical area.

GIS Certificate

The certificate in Geographical Information Science will provide students with knowledge and experience to compete and work in the field of GIS both in public and private sector. The combination of courses will focus on the acquisition, storing, visualization, modeling, and analysis of information on spatial phenomena with some emphasis on geospatial applications.

Required Courses

The proposed certificate will require a total of 15 credit hours. These will be allocated as follows.

Section A - Core Courses; total 9 credit hours:

GEOL 4331: Introduction to GIS 3 hrs. (the introductory course will move from graduate to undergraduate 4000 level; a CMB form accompanies this document)
GEOL 6326: Applications of GIS 3 hrs.
GEOL 6325: Remote Sensing 3 hrs.

Section B - Electives, 3 credit hours from the following:

GEOL 6389 Advanced GIS for Geologists 3 hrs.
CIVI 7397 Advanced Engineering GIS 3 hrs.

Section C - Required project, with a minimum of 3 credit hours

Supervised by qualified professor in the area of speciality. Senior research project (4396) for well-qualified undergraduates, selected topics in geology (6397), or thesis or dissertation hours (7398, 8398) for graduates.

Admission Requirements

Students seeking this certificate must have an undergraduate degree and have graduate or post baccalaureate status at the University of Houston. With permission of the Department, selected well-qualified undergraduates will be allowed to participate in the certification program.

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Approved
Assoc. DEAN
15 Dec 2005

Course Descriptions

GEOL4331 INTRODUCTION TO GIS. Cr. 3. (3-0). Prerequisite: upper level standing in Natural Science and Mathematics or consent of instructor. Study of the fundamentals of Geographic Information Science, introduction to databases and geospatial metadata, hands-on experience with GIS and graphics hardware and software.

GEOL6326 APPLICATIONS OF GEOGRAPHIC INFORMATION SYSTEMS. Cr. 3.(3-0). Prerequisites: graduate standing or consent of instructor. Use of GIS in geosciences and environmental modeling, integration of GIS and statistics, GIS and physical models, and applications of GIS in geosciences, hydrology, atmospheric sciences and ecology.

GEOL6325 REMOTE SENSING. Cr. 3.(3-0). Prerequisites: graduate standing or consent of instructor. Remote sensing methods, capabilities and limitations of methods, digital image processing, and applications of remote sensing

GEOL6389 ADVANCED GIS FOR GEOLOGISTS. Cr. 3. (3-0). Prerequisite: GEOL6326. Use of Geographic Information Systems in geology, geophysics, geohazards, hydrology, environmental geosciences, and petroleum geology.

CIVI7397 ENGINEERING GEOGRAPHIC INFORMATION SYSTEMS

Use of Geographic Information Systems (GIS, Arcview, ArcInfo, Spatial Analyst, 3-D Spatial Analyst) in engineering applications including hydrology, hydrogeology, water quality, land use/land cover, and environmental resources management. Topics include working with spatial data, GIS databases, analyzing and querying data and analyzing spatial relationships. Hands-on GIS learning experience through laboratory exercises and a term project.

New CBM forms to accompany this.

GEOL 4331: originally GEOL 6388, change to undergraduate course

GEOL 6325 and 6326: change prerequisites from 'graduate standing and consent of instructor' to 'graduate standing or consent of instructor'.

Geographical Information Science Certificate

The certificate in Geographical Information Science (GIS) provides students with knowledge and experience to work in the field of GIS both in the public and private sectors. The combination of courses focuses on the acquisition, storing, visualization, modeling, and analysis of information on spatial phenomena with some emphasis on geospatial applications.

Admission Requirements

Students seeking this certificate must have an undergraduate degree and hold graduate or post-baccalaureate status at the University of Houston. With permission of the department Chair, qualified undergraduates will be allowed to participate in the certification program. Students must fulfill the prerequisite requirements for all courses required.

The certificate requires a total of 15 credit hours.

Requirements	Hours
Geology	
GEOL 4331, 6326, and 6325	9
Electives	
GEOL 6389, CIVI 7397, or 3 hours of approved GIS courses from other departments	3
Individual Project	3
To be supervised by instructor in the area of specialty. This may be represented by a Senior Research Project course for qualified undergraduates, or Special Problems research hours for graduate students.	