

GEOGRAPHIC INFORMATION TECHNOLOGIES PROGRAM

The Program

The Geographic Information Technologies Program, administered through the Department of Environmental, Earth and Ocean Sciences (EEOS), offers a number of courses teaching the concepts, principles, techniques, and applications of computer cartography, remote sensing and digital image processing, geographic information systems (GIS), global positioning systems (GPS), and digital photogrammetry. The program is designed for majors in EEOS or any other discipline that makes use of spatial data, and for non-matriculated students who wish to acquire the necessary background and skills for employment in the field of geographic information technologies.

The program concentrates on four distinct areas: (1) cartography, (2) remote sensing, (3) geographic information systems, and (4) numerical modeling of geographic and environmental systems. Students will become familiar with the techniques and underlying principles of the collection, manipulation and analysis of geographic data and the effective presentation of information. Most of the courses offered through the program are computer-based.

Eligibility

The program is open to all undergraduates at the University of Massachusetts Boston, as well as to non-matriculated students, and to working professionals who are interested in obtaining a certificate of study. Earth and geographic sciences majors may enroll in the program; four courses taken as part of the program may count toward their major. For matriculated students, successful completion of the program is recorded on official university transcripts when they have met all graduation requirements. Non-matriculated students receive a certificate of completion.

Requirements

Six courses are required for completion of the program. There are currently two tracks in the program: one in remote sensing and one in geographic information systems. Students in the remote sensing track are required to take

- EEOS 370 (Remote Sensing),
- EEOS 460 (Digital Image Processing in Remote Sensing), and
- EEOS 380 (Introduction to Geographic Information Systems)

Students in the GIS track are required to take

- EEOS 360 (Computer and Analytical Cartography),
- EEOS 380 (Introduction to Geographic Information Systems), and
- EEOS 381 (Applications of Geographic Information Systems).

EEOS 265 (Computer Applications in Geography) is a prerequisite for all required courses in the program. The prerequisite may be waived for students who have adequate experience with computers (basic understanding of computers and experience with DOS, UNIX, Windows 98, and Windows NT). These students however, must still complete six courses in the program. Students in the remote sensing track are expected to have a strong background in multivariate statistics.

Elective courses include

- EEOS 410 (Cartographic Design and Communication),
- EEOS 444 (Cooperative Education Field Experience in Geography),
- EEOS 471 (Arc Macro Language),
- EEOS 472 (C Programming for Geoscience Applications),
- EEOS 478 (Independent Study),
- EEOS 480 (Special Topics).

For students in the remote sensing track, EEOS 360 (Computer and Analytical Cartography) and EEOS 381 (Applications of Geographic Information Systems) are considered elective courses.

For students in the GIS track, EEOS 370 (Remote Sensing) and EEOS 460 (Digital Image Processing in Remote Sensing) can be taken as electives.

HYDROGEOLOGY PROGRAM

The Program

The Hydrogeology Program, administered through the Department of Environmental, Earth and Ocean Sciences (EEOS), offers a sequence of courses which, taken as a whole, will teach the concepts, techniques of evaluation, and applications of the broad field of ground water study. The program includes examination of geologic principles relevant to hydrogeology, traditional ground water resource evaluation, and modeling of ground water phenomena using current applicable software. Additionally, this program is intended to be interdisciplinary; electives from chemistry and mathematics may be taken as part of the program.

The program is designed for majors in EEOS or any other discipline in which an understanding of hydrogeological phenomena would be beneficial. It is also useful for those professionals already working in the fields of site assessment, evaluation, and/or remediation, who may wish to acquire technical education toward certification as a licensed site professional.

Eligibility

The program is open to all undergraduates at the University of Massachusetts Boston, as well as to non-matriculated students, or working professionals. EEOS majors may enroll in the program; four courses taken as part of the program may count toward their major.

For matriculated students, successful completion of the program is recorded on official university transcripts when they have met all graduation requirements. Non-matriculated students receive a certificate of completion.

Requirements

Seven courses (a minimum of 21 credits) are required for the completion of the program. Courses required for the program are EEOS 110 (Physical Geology), EEOS 295 (Hydrology) EEOS 330 (Quantitative Hydrogeology), EEOS 385 (Applied Hydrogeology), and EEOS 401 (Field Methods). Two electives are available from among a number of selected EEOS, chemistry and mathematics courses.

Students wishing to enroll in the program must have the approval of the EEOS Department chairperson, or the director of the Hydrogeology Program.