

Geographic Information Science and Technology (GIST) Certificate Program for Undergraduates

This certificate program will provide a solid foundation and a useful credential in the field of geospatial technologies (Geographic Information Systems (GIS), remote sensing (RS), and computer mapping (CM)) for undergraduate and non-degree students. GIS are computer systems for integrating and analyzing spatial data. RS uses satellite or airborne sensors to acquire spatial information, particularly for earth observation. Computer mapping has largely replaced traditional cartography for presenting data and analyses in maps. The GIST certificate program will provide students with a background in the science, techniques, and application of these geospatial methods and techniques that will enable them to embark on public and private sector careers or to undertake further studies in geography and other fields.

Who is qualified for this GIST certificate program?

Current matriculated undergraduate students at UMass-Amherst.

How to proceed?

Student should plan to take the required courses over at least **three** semesters. It will be possible for students to complete the certificate in a single year of focused study, although most students will likely integrate GIST courses into their degree program studies and complete the GIST courses over two or more years.

Upon completion, meet with the program advisor to fill out the clearance form. However, it is always a good practice to meet or email advisor at the beginning, so you will be informed on course offering each semester.

Curriculum

The program requires 5 courses (~17 credits total), including 3 foundation courses and 2 advanced-level elective course. We will consider Independent Study to substitute Foundation Courses for individual case, but at least two upper level courses are required.

1. Three required foundation courses (11 total credits)

Foundation in Cartography/Mapping

GEOGRAPH 352 Computer Mapping (Spring & Fall, 3cr)

Foundation in GIS

**GEOGRAPH 593/ECO 585 Introduction to GIS (Spring & Fall, 4cr)*

**Open to GEOG, NRC, ES majors only in SPIRE. Email the instructor for override if necessary.*

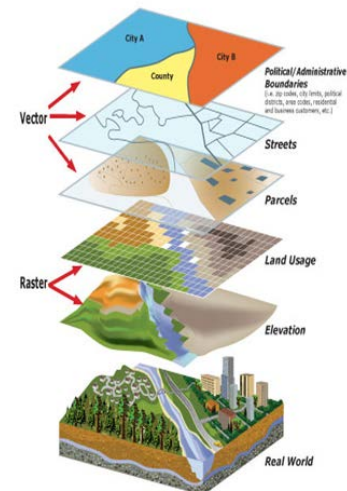
Other GIS courses that can be used to fulfill this requirement are:

CEE470/570: Geographic Information Systems for Engineers

RP625: Introduction to GIS for Planning

Foundation in RS

GEOGRAPH426 Remote Sensing and Image Interpretation (Fall, 4 cr)



2. Two advanced required course (6 total credits)*

Students choose two courses from the following courses:

GEOGRAPH 468 GIS II: GIS and Spatial Analysis (Spring)

GEOGRAPH 493W Web GIS (Spring)

ECO697K Python for ArcGIS (GIS programming) (Spring)

NRC 597B/SPP 597B Unmanned Aircraft Systems (Spring)

GEOGRAPH 560 Geomorphology (Spring)

CEE697RS Remote Sensing for Hydrology (Spring)

GEOGRAPH 491P GIS Programming (Fall)

GEOGRAPH 493S Spatial Decision Making & Support (Fall)

ECO697DD Spatial Databases & Data Interoperability (Fall)

*Advanced courses might not be offered every year.

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