

## 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 geographical 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. 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. 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.

#### 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:

*CEE597G: 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)*

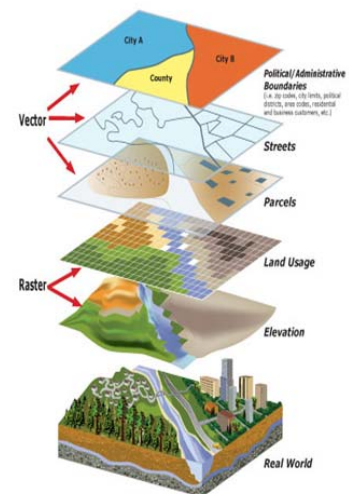
*ECO697K Python for ArcGIS (GIS programming) (Spring)*

*PUBP&ADM 597B ST-Unmanned Aircraft Systems (Spring)*

*GEOGRAPH 560 Geomorphology (Spring)*

*CEE697RS Remote Sensing for Hydrology (Spring)*

Advanced courses might not be offered every year.



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