School of Economic, Political and Policy Sciences

Geospatial Information Sciences (BS)

Geospatial Information Science (or GIScience) is the study of relationships between phenomena in space and time. In recent years, powerful new technologies and techniques have emerged that greatly improve our ability to acquire, archive, analyze, and communicate information regarding people, places, and other things on or near the Earth's surface. These same technologies and techniques allow us to combine this information into multi-tiered databases describing the physical, social, and other aspects of all or portions of the Earth. Such databases can then be analyzed in novel ways that take the data's explicit spatial (or locational) nature into account. The insights produced by analyzing these types of databases are revolutionizing many fields of science, government, and business. Currently, commonplace consumer products such as web-based mapping systems and GPS units that incorporate locational information are directly impacting the everyday lives of ordinary individuals.

Graduates of the Bachelors of Science in Geospatial Information Science program will understand the logical, mathematical, and technological foundations for compiling and analyzing spatial data. They will be skilled in solving geospatial problems, enabling them to move into professional roles handling the geospatial needs of typical corporate, government, and nonprofit organizations. The graduates will not only be skilled in the use of common GIScience software systems, but also will understand the underlying principles upon which software systems are based. This will allow them to transfer their knowledge from one software system to another, to expand the capabilities of these systems, and most importantly, to view geospatial problems as issues that can be solved by applying basic theories, techniques and methodologies.

Mission and Objectives

The mission of the Bachelor of Science in Geospatial Information Sciences program is to provide students with a rigorous understanding of the fundamental theories and concepts underlying GIScience, as well as to provide them with extensive hands-on experience with contemporary GIScience hardware and software. The goal of the program is to give students a firm grasp of the theories, ideas, and techniques that underlay software and hardware systems for the compilation and analysis of spatially referenced data, and thus provide them with a foundation of knowledge and skill that transcends any individual piece of software or hardware. Graduates of this program will be able to successfully compete for professional positions within GIScience and related fields, and be admitted into the best graduate schools globally.

Students within the program will:

- Demonstrate their understanding of the underlying theories, ideas, concepts and techniques of

GIScience.
- Master contemporary computer hardware and software systems commonly employed in GIScience.
- Demonstrate problem solving skills that employ their understanding of theories, ideas and concepts as well as their mastery of GIScience software and hardware.

Bachelor of Science in Geospatial Information Sciences

Degree Requirements (120 semester credit hours)[1]

View an Example of Degree Requirements by Semester

Faculty

FACG> epps-geospatial-information-sciences-bs

Professors: Brian J. L. Berry, Denis J. Dean, Daniel A. Griffith, Fang Qiu, May Yuan

Associate Professors: Yongwan Chun, Dohyeong Kim, Michael Tiefelsdorf

Assistant Professor: Anthony R. Cummings

Senior Lecturer: Irina Vakulenko

I. Core Curriculum Requirements: 42 semester credit hours[2]

Communication: 6 semester credit hours

COMM 1311 Survey of Oral and Technology-based Communication

RHET 1302 Rhetoric

Mathematics: 3 semester credit hours

MATH 1325 Applied Calculus I[3]

Life and Physical Sciences: 6 semester credit hours

Choose two courses from the following:

ENVR 2302 or GEOG 2302 or GEOS 2302 The Global Environment[3]

GEOS 1303 Physical Geology

NATS 1311 The Universe, and Everything Else

NATS 2333 Energy, Water, and the Environment

PHYS 1301 College Physics I

Language, Philosophy and Culture: 3 semester credit hours

Choose any 3 semester credit hours from Language, Philosophy and Culture Core courses (see advisor)

Creative Arts: 3 semester credit hours

Choose any 3 semester credit hours from Creative Arts Core courses (see advisor)

American History: 6 semester credit hours

Choose any 6 semester credit hours from American History Core courses (see advisor).

Government / Political Science: 6 semester credit hours

GOVT 2305 American National Government

GOVT 2306 State and Local Government

Social and Behavioral Sciences: 3 semester credit hours

Choose one course from the following:

CRIM 1301 Introduction to Criminal Justice

CRIM 1307 Introduction to Crime and Criminology

ECON 2301 Principles of Macroeconomics

ECON 2302 Principles of Microeconomics

GEOG 2303 People and Place: An Introduction to World Geographic Regions[3]

SOC 1301 Introduction to Sociology

Component Area Option: 6 semester credit hours

EPPS 2301 Research Design in the Social and Policy Sciences

EPPS 2302 Methods of Quantitative Analysis in the Social and Policy Sciences

II. Major Requirements: 39 semester credit hours

Major Preparatory Courses: 6 semester credit hours beyond Core Curriculum

ENVR 2302 or GEOG 2302 or GEOS 2302 The Global Environment[3]

GEOG 2303 People and Place: An Introduction to World Geographic Regions[3]

GEOG 3370 The Global Economy

GEOG 3377 or PA 3377 Urban Planning and Policy

MATH 1325 Applied Calculus I[3]

Major Core Courses: 18 semester credit hours

GISC 2305 or GEOS 2305 Spatial Thinking and Data Analytics

GISC 3304 or GEOG 3304 or GEOS 3304 Principles of Geospatial Information Sciences

GISC 4381 Spatial Data Science

GISC 4325 or GEOS 4325 Introduction to Remote Sensing

GISC 4382 Applied Geographic Information Systems

GISC 4386 Global Change and Its Challenges

Concentrations: 15 semester credit hours in ONE of the following concentration areas

Geography

GEOG 3331 Urban Growth and Structure

GEOG 3357 Spatial Dimensions of Health and Disease[4]

GEOG 3359 Human Migration and Mobility: Global Patterns[4]

GEOG 3372 Population and Development

GEOG 3382 Russia: Yesterday, Today, and Tomorrow[4]

GeoComputation and GeoVisualization

GISC 4317 GeoComputation

GISC 4326 Cartography and GeoVisualization

GISC 4363 Internet Mapping and Information Processing

GISC 4384 Health and Environmental GIS: A Global Perspective

GISC 4385 Advanced Applications in GIS

III. Elective Requirements: 39 semester credit hours

Prescribed Electives: 15 semester credit hours

All students are required to take at least fifteen semester credit hours of prescribed upper-division elective courses.

Free Electives: 24 semester credit hours

This requirement may be satisfied with lower- and upper-division courses from any field of study. Students must complete at least 51 semester credit hours of upper-division courses to qualify for graduation.

Minor in Geography: 18 semester credit hours

Required Courses: 9 semester credit hours

GEOG 2302 The Global Environment

GEOG 3304 Principles of Geospatial Information Sciences

GEOG 3370 The Global Economy

Upper-Division Courses: 9 semester credit hours

Any upper-division Geography (GEOG) or Geographic Information Sciences (GISC) courses, excluding GEOG 4V97.

Minor in Geospatial Information Sciences (GIS): 18 semester credit hours

Required Courses: 9 semester credit hours

GISC 2305 Spatial Thinking and Data Analytics

GISC 3304 or GEOG 3304 Principles of Geospatial Information Sciences

GISC 4325 Introduction to Remote Sensing

Upper-Division Courses: 9 semester credit hours

Any upper-division Geography (GEOG) or Geographic Information Sciences (GISC) courses, excluding GEOG 4V97.

1. Incoming freshmen must enroll and complete requirements of UNIV 1010 and the corresponding school-related freshman seminar course. Students, including transfer students, who complete their core curriculum at UT Dallas must take UNIV 2020.

2. Curriculum Requirements can be fulfilled by other approved courses from institutions of higher education. The courses listed are recommended as the most efficient way to satisfy both Core Curriculum and Major Requirements at UT Dallas.

3. A Major requirement that also fulfills a Core Curriculum requirement. Semester credit hours are counted in Core Curriculum.

4. Alternative courses, as approved by the program head, may be used to satisfy this requirement.

Updated: 2020-04-13 10:23:18 v9.6f67eb