

Geographic Information Systems (GIS)

GIS 1600

Principles of Geographical Information Science

3

Introduces strategies for integrating GIS to support instruction and learning on any topic of spatial data. Discusses concepts of basic GIS activities that enhance student learning and critical thinking. Teaches skills to visualize global, regional and local data and establish connections to those disciplines. Explains design standards and processes for investigating a problem and preparing a GIS map. Introduces ArcGIS Online to increase GIS applicability to the workplace.

GIS 2640

Fundamentals of Geographic Information Systems

3

Introduces the concepts and components of a Geographic Information System (GIS). Includes the essential skills of operating a functional GIS through the use of ArcGIS 10.x software. Explains the operational processes of spatial data acquisition, editing, file geodatabase design, spatial query and display, spatial analysis, map layouts and various visualizations, preliminary application development, and project applications. Describes various GIS data sources. Lab access fee of \$45 for computers applies.

GIS 3600 (Cross-listed with: GEOG 3600) Introduction to Geographic Information Systems

4

* Prerequisite(s): [Completion of a course that meets the PP (Physical Science) or SS (Social Science) general education requirement is recommended] and University Advanced Standing

Introduces the history, theory, and operation of Geographic Information Systems (GIS). Includes an introduction to GIS data sources, database design, data input, spatial analysis, and map production. Offers valuable preparation for careers in geology, geography, geographic information systems, geomatics, planning, surveying, marketing, environmental technology, biology, engineering, and other related fields. Lab access fee of \$35 for computers applies. Software fee of \$18 applies.

GIS 3620

Advanced Geographic Information Systems

3

* Prerequisite(s): (GIS 3600 or GEOG 3600) and University Advanced Standing

Presents Geospatial data and modeling principles and techniques using raster and vector geoprocessing. Teaches Geovisualization and Geospatial information sources, digital terrain modeling, spatial data analysis, and mapping project implementation. Describes concepts of real property related to land registration and information systems and the value of maps for governance, commerce, and research of social and environmental systems regionally, nationally, and globally. Software fee of \$18 applies. Lab access fee of \$45 for computers applies.

GIS 3630

Geographic Information Systems Application Development

3

* Prerequisite(s): GIS 3600 or GEOG 3600, GIS 3620 or GEOG 3650, and University Advanced Standing

Develops customization skills for geospatial data, modeling, and automation. Introduces and defines basic Python concepts and scripting environments for the most common GIS software. Delineates common scripting errors and applies Python syntax rules when writing scripts. Lab access fee of \$45 applies.

GIS 3640

Thematic Mapping Environmental Impacts

3

* Prerequisite(s): GIS 2640 and University Advanced Standing

Analyzes ways to geographically visualize the impact of natural disasters, energy processes, human impacts, and other impacts on the environment. Reviews the regional and global interrelationships of land, water, and atmosphere to the environment. Involves producing a thematic global and regional mapping project(s) considering the environmental impacts or potential impacts as presented in this course. Lab access fee of \$45 for computers applies.

GIS 3650

Thematic Mapping Culture and Societies

3

* Prerequisite(s): GIS 2640 and University Advanced Standing

Focuses on thematic maps of human activity covering the major cultural regions of the world considering cultural, political, and economic environments. Presents various ways to cartographically depict sociological data such as; population, religion, language, migration, and industries, etc.. Involves producing a thematic global and regional mapping project(s) as presented in this course. Lab access fee of \$45 for computers applies.