Geographic Information Systems (GIS)

Courses

GIS A101 Introduction to Geographic Information Systems **3 Credits**
Introduces the concepts and practical skills of geographic information systems (GIS). Covers the digital representation of geographic objects, data sources, data input and manipulation, map projection and coordinate systems including the Public Land Survey System (PLSS), data management and analysis, and mapping and presentation of geographic information.
Special Note: Students must attend the lab GIS A101L concurrently. The lab is not a separate course but is designed as a separate session to facilitate scheduling.
Corequisites: GIS A101L.

GIS A201 Intermediate Geographic Information Systems **3 Credits**
Introduces theoretical and practical examination of analytical methods used in advanced GIS. Topics include georeferencing, spatial analysis and inference, geospatial database, network analysis, and spatial modeling and visualization.
Prerequisites: GIS A101 with a minimum grade of C and (MATH A152 with a minimum grade of C or MATH A155 with a minimum grade of C or MATH A221 with a minimum grade of C or MATH A251 with a minimum grade of C or MATH A251F with a minimum grade of C).

GIS A301 Web GIS **3 Credits**
Introduces the principles and practical applications of using web technologies to solve geospatial problems.
Prerequisites: CSCE A101 with a minimum grade of C and GIS A201 with a minimum grade of C.

GIS A351 Remote Sensing **3 Credits**
Introduces principles of image formation, electromagnetic spectrum, imaging systems, photo interpretation and image classification using image analysis software.
Prerequisites: GIS A201 with a minimum grade of C or concurrent enrollment.

GIS A370 GIS and Remote Sensing for Natural Resources **3 Credits**
Introduces the principles and terminology of natural resources, landscape ecology and ecosystem management. Develops students' analytical skills using spatial technologies consisting of geographic information systems (GIS), remote sensing and global positioning systems (GPS) as tools to gain knowledge of landscape form and function.
Prerequisites: GIS A351 with a minimum grade of C.

GIS A458 Spatial Data Management **3 Credits**
Presents the geospatial database technology underlying geographic information systems. Topics include spatial data models, querying, implementation of relational and spatial operators, and system architecture for geospatial databases.
Prerequisites: GIS A201 with a minimum grade of C.

GIS A466 Spatial Analysis **3 Credits**
Introduces theoretical foundation for, and practical application of, the statistical analysis of spatial data. Topics include characterization of spatial data, techniques for visualizing, exploring and modeling spatial data distributed as point patterns, continuous data, area data, and spatial interaction data.
Prerequisites: GIS A201 with a minimum grade of C and STAT A253 with a minimum grade of C.

GIS A467 Image Analysis **3 Credits**
Introduces principles of digital image processing, multi-temporal image analysis, change detection and spatio-temporal geo-visualization.
Prerequisites: CSCE A101 with a minimum grade of C and GIS A201 with a minimum grade of C.

GIS A498 Individual Research **1-3 Credits**
Covers process of successful undergraduate research from literature review to completion of the research and its publication. Students will be engaged in an independent research project covering topics in geomatics under the supervision of a faculty member.
Special Note: May be repeated for a maximum of 6 credits.
Registration Restrictions: Admission to the Bachelor of Science in Geomatics, junior or senior standing, and department approval