GEOGRAPHIC INFORMATION SCIENCES (GISC)

GISC 200 - Introduction to GIS (4 Credits)
An introduction to the theory and application of GIS technology, providing students with the knowledge required to plan and undertake a project that has a GIS component. ArcGIS is used in hands-on practical sessions that illustrate theoretical concepts including the nature of geographical information and the different types of spatial data and tools. Weekly or bi-weekly assignments. To serve as the prerequisite for all 300-level GISC courses, students must earn a grade of C or higher in this course.

GISC 250 - Introduction to Geographic Information Systems and Cartography (4 Credits)
An introduction to the principles of cartography and the use of maps as research tools, with emphasis on the creation of maps using a variety of techniques. Laboratory. To serve as the prerequisite for all 300-level GISC courses, students must earn a grade of C or higher in this course.

GISC 340 - Remote Sensing and Air Photo Interpretation (4 Credits)
Prerequisite: GISC 200 or GISC 250 or EESC 205 (minimum grade of C). Digital processing, analysis and interpretation of remotely sensed images, including those coming from active or passive satellite-based sensors and aerial photography. Practical weekly assignments and individual research-based term project.

GISC 351 - Spatial Analysis (4 Credits)
Prerequisite: GISC 200 or GISC 250 or EESC 205 (minimum grade of C). Concepts and applications of geographic information systems (GIS). Emphasis on the use of GIS as a method for analyzing and solving geographic problems. Practical assignments weekly or bi-weekly.

GISC 355 - Mobile Geographic Information Systems and Global Navigation Satellite Systems (4 Credits)
Prerequisite: GISC 200 or GISC 250 or EESC 205 (minimum grade of C). Concepts and techniques of field mapping using mobile GIS and GNSS, including data collection and analysis. Detailed study of technology and application of global navigation satellite systems, like GPS and Galileo. Requires fieldwork. Laboratory.

GISC 382 - Web GIS: Concepts and Applications (4 Credits)
Prerequisite: GISC 200 or GISC 250 or EESC 205 (minimum grade of C). Concepts and basic practical applications of Web GIS. Students will learn how to use the state-of-art technical skills and knowledge to quickly develop Web GIS applications to publish, share, and combine various geospatial resources through the Internet. Practical assignments weekly or bi-weekly.

GISC 450 - GIS Programming (4 Credits)
Prerequisite: GISC 351. Introduction to fundamental concepts of computer programming, OOP concepts, and ESRI's Python Applications Programming Interface (API) ArcPy. Students develop custom tools and solutions that extend core ArcGIS functionality; apply object-oriented programming concepts; and develop Python resources to create applications and tools that perform specific GIS tasks. Includes hands-on programming exercises, where students write scripts and develop custom tools that automate tasks. Cross-listed with MSGA 555.

GISC 471 - Special Topics (4 Credits)
Prerequisite: Permission of the instructor. Advanced course in Geographic Information Science. Topic selected in advance by instructor.

GISC 491 - Directed Study in GIS (1-3 Credits)
Prerequisite: Permission of instructor. Intensive individual research using GIS under the guidance of a faculty member.

GISC 495 - GISC Certificate Capstone Project (3 Credits)
Prerequisite: At least 12 credit hours of certificate coursework and permission of instructor. Intensive individual research using GIS under the guidance of a faculty member.

GISC 498 - Mapping Your Future (1 Credits)
Prerequisite: 12 credits in GIS coursework; junior or senior standing. Students will assemble samples of their work for a GIS portfolio, and explain the process leading to each product. They will also reflect on their experience as undergraduate students learning and utilizing GIS.

GISC 499 - GIS Internship (3 Credits)
Prerequisites: At least 12 credit hours of certificate coursework and permission of instructor. Supervised off campus experience. When taken as capstone to the GIS Certificate it must be in the last term of the GISC program.