GIS: Geographic Information Science Courses

Courses

GIS 3015   Cartographic Skills
3 sh (may not be repeated for credit)
Prerequisite: GEO 1200/L OR GLY 2010/L OR ESC 2000/L
Co-requisite: GIS 3015L

GIS 3015L   Cartographic Skills Lab
1 sh (may not be repeated for credit)
Prerequisite: GIS 3015*
Co-requisite: GIS 3015

GIS 4006   Computer Cartography
3 sh (may not be repeated for credit)
Prerequisite: GIS 4006*

GIS 4006L   Computer Cartography Lab
1 sh (may not be repeated for credit)
Co-requisite: GIS 4006

GIS 4035   Photo Interpretation and Remote Sensing
3 sh (may not be repeated for credit)
Prerequisite: GIS 3015/L

GIS 4035L   Photo Interpretation and Remote Sensing Lab
1 sh (may not be repeated for credit)
Prerequisite: GIS 4035*
Co-requisite: GIS 4035

GIS 4043   Geographic Information Systems
3 sh (may not be repeated for credit)
Co-requisite: GIS 4043L

GIS 4043L   GIS Laboratory
1 sh (may not be repeated for credit)
Co-requisite: GIS 4043

GIS 4048   Applications in Geographic Information Systems
3 sh (may not be repeated for credit)
Prerequisite: GIS 4043/L

Applied skills emphasizing the fundamentals of aerial photograph interpretation and basics of multiband spectral reconnaissance of the environment-multispectral photography, infrared, microwave scanning and multifrequency radar systems. Application includes their uses in the study of cultural and biophysical phenomena. Material and supply fee will be assessed for corresponding lab. Credit cannot be received for both GEO 4131 and GIS 4035.

The purpose is to make students familiar with digital image processing methods and techniques as applied in solving environmental and urban problems. The course is divided into four basic components: introduction of the generic process of remote sensing applications, introduction of some advanced digital image processing techniques and methods, case studies illustrating this process, and student projects using this process. Offered concurrently with GIS 5039; graduate students will be assigned additional work. Material and supply fee will be assessed. Permission is required.

INTRODUCTION TO GIS LABS

GIS 3015 Lab
GIS 4006 Lab
GIS 4035 Lab
GIS 4043 Lab
GIS 4048 Lab

The course focuses on the fundamentals of cartography, spatial statistics, thematic mapping techniques, and web based mapping. Students will gain an inter-disciplinary understanding of cartographic representation and visualization with hands on applications using cutting edge GIS and graphic design software to create purpose tailored maps. Upon successful completion of this course, students will be able to interpret and appropriately communicate spatial data; will have developed a personalized cartographic style; will have created a professional GIS portfolio for current/potential employers; and most importantly will have developed a keen appreciation for maps and spatial awareness.

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The application of GIS methods and techniques in solving practical problems. A generic process for applying GIS techniques in problem solving is introduced, and several case studies of GIS applications in environmental and social domains will be analyzed. Offered concurrently with GIS 5100; graduate students will be assigned additional work. Permission is required. Material and supply fee will be assessed. Credit cannot be received for both GIS 4048 and GEO 4152.
GIS 4071  Methods and Techniques in Environmental Resource Management and Planning
3 sh (may not be repeated for credit)
Prerequisite: GIS 4043/L

Tools, methods, and techniques employed in the study of environmental impact and resource management. Research fundamentals studied and applied to environmental problems such as land use, environmental impact studies, Florida's development of regional impact, resource evaluation, and other topics. Permission is required. Material and supply fee will be assessed. Credit cannot be received for both GIS 4071 and GEO 4373.

GIS 4102  GIS Programming
3 sh (may not be repeated for credit)
Prerequisite: GIS 4043/L

In today’s technology driven world we are fortunate to have access to many tools with which to analyze and explore digital spatial data. During this course students will learn to use programming techniques to create applications that perform fundamental spatial analysis and automation tasks, such as geoprocessing, editing, database management, projecting data, and map creation. The course will focus primarily on using the Python programming language within the context of Esri’s desktop GIS environment. Offered concurrently with GIS 5103; graduate students will be assigned additional work. Permission required. Credit may not be received in both GIS 4102 and GIS 5103.

GIS 4260  GIS Applications for Archaeology
3 sh (may not be repeated for credit)
Prerequisite: GIS 4043/L

This course will serve as an introduction to archaeological applications of GIS technology and data management and analysis. Students will learn how to compile, transform, analyze and present sources of archaeological and historical data, and will utilize this information in GIS for cultural resources interpretation, management and predictive modeling. Additionally, this course is designed to reinforce best practices for collecting spatially-related data on anthropological archaeology projects. Restricted to students in online GIS Certificate Program.

GIS 4938  Special Topics in GIS for Archaeology
3 sh (may not be repeated for credit)
Prerequisite: GIS 4260

This course will serve as an advanced approach to archaeological applications of GIS technology and data management and analysis. Students will learn how to compile, transform, analyze and present sources of archaeological and historical data, and will utilize this information in GIS for cultural resources interpretation, management and predictive modeling. Additionally, this course is designed to reinforce best practices for collecting spatially-related data on anthropological archaeology projects. Offered concurrently with GIS 5938; graduate students will be assigned additional work.

GIS 4944  GIS Internship
1-3 sh (may not be repeated for credit)
Prerequisite: GIS 4043/L

Supervised application of Geographic Information Science (GIS) in business, government, non-profit, educational or other environmental organizations. Offered concurrently with GIS 5945; graduate students will be assigned additional work. Permission is required.

GIS 5007  Computer Cartography
3 sh (may not be repeated for credit)
Co-requisite: GIS 5007L

The course focuses on the fundamentals of cartography, spatial statistics, thematic mapping techniques, and web based mapping. Students will gain an inter-disciplinary understanding of cartographic representation and visualization with hands on applications using cutting edge GIS and graphic design software to create purpose tailored maps. Upon successful completion of this course, students will be able to interpret and appropriately communicate spatial data; will have developed a personalized cartographic style; will have created a professional GIS portfolio for current/potential employers; and most importantly will have developed a keen appreciation for maps and spatial awareness.

GIS 5007L  Computer Cartography Lab
1 sh (may not be repeated for credit)
Co-requisite: GIS 5007

The course focuses on the fundamentals of cartography, spatial statistics, thematic mapping techniques, and web based mapping. Students will gain an inter-disciplinary understanding of cartographic representation and visualization with hands on applications using cutting edge GIS and graphic design software to create purpose tailored maps. Upon successful completion of this course, students will be able to interpret and appropriately communicate spatial data; will have developed a personalized cartographic style; will have created a professional GIS portfolio for current/potential employers; and most importantly will have developed a keen appreciation for maps and spatial awareness.
GIS 5027    Aerial Photography and Remote Sensing
3 sh (may not be repeated for credit)
This course emphasizes the fundamentals of aerial photography and
digital processing of satellite images. In the first part of the course,
characteristics of aerial photographs, such as scale and distortion, are
discussed. Criteria used in the interpretation of aerial photographs are
introduced. In the second part of the course the physical and technical
principles of digital satellite remote sensing are explained. This course
is built on basic concepts established in introductory Earth Science
and Cartography courses, so graduate students should be familiar
with those concepts. Please consult with the course instructor for any
questions regarding these prerequisite concepts. Graduate students
will be assigned additional work.

GIS 5027L    Aerial Photography and Remote Sensing Lab
1 sh (may not be repeated for credit)
Prerequisite: GIS 5027*
Co-requisite: GIS 5027
Concepts learned in associated lecture will be applied in this lab.
Interpretation of physical and human features will be carried out
on real-world aerial photographs. Digital satellite images will be
processed, analyzed and interpreted in lab using digital image
processing software. The software will be introduced in lecture and lab.
This course is built on basic concepts established in introductory Earth
Science and Cartography courses, so graduate students should be
familiar with those concepts. Please consult with the course instructor
for any questions regarding these prerequisite concepts. Graduate students
will be assigned additional work.

GIS 5039    Applications in Remote Sensing
3 sh (may not be repeated for credit)
The purpose is to make students familiar with digital image processing
methods and techniques as applied in solving environmental and
urban problems. The course is divided into four basic components:
introduction of the generic process of remote sensing applications,
introduction of some advanced digital image processing techniques
and methods, case studies illustrating this process, and student
projects using this process. Offered concurrently with GIS 4036;
graduate students will be assigned additional work. Material and supply fee will be assessed. Permission is required. Credit cannot be received for both GIS 5100 and GEO 5157.

GIS 5050    Geographic Information Systems
3 sh (may not be repeated for credit)
Prerequisite: GIS 5050*
Co-requisite: GIS 5050
This course teaches fundamental concepts and techniques of
Geographic Information Systems (GIS). It covers basic concepts
such as map projections, spatial data models, relational databases,
spatial analysis, and visualization of spatially distributed data and
phenomena. The applications of GIS are presented. Future issues for
GIS and state-of-the-art technology are also discussed. Cross listed with GIS 4043; Graduate students will be assigned additional work.

GIS 5050L    Geographic Information Systems Lab
1 sh (may not be repeated for credit)
Prerequisite: GIS 5050*
Co-requisite: GIS 5050
The application of GIS methods and techniques in solving practical
problems. A generic process for applying GIS techniques in problem
solving is introduced, and several case studies of GIS applications
in environmental and social domains will be analyzed. Offered
concurrently with GIS 4048; graduate students will be assigned
additional work. Material and supply fee will be assessed. Credit cannot be received for both GIS 5100 and GEO 5157.

GIS 5103    GIS Programming
3 sh (may not be repeated for credit)
Prerequisite: GIS 5050/L
In today's technology driven world we are fortunate to have access
to many tools with which to analyze and explore digital spatial data.
During this course students will learn to use programming techniques
to create applications that perform fundamental spatial analysis
and automation tasks, such as geoprocessing, editing, database
management, projecting data, and map creation. The course will
focus primarily on using the Python programming language within
the context of Esri's desktop GIS environment.Offered concurrently
with GIS 4102; graduate students will be assigned additional work.
Permission is required. Credit may not be received in both GIS 5103
and GIS 4102.

GIS 5265    GIS Applications for Archaeology
3 sh (may not be repeated for credit)
This course will serve as an introduction to archaeological applications
of GIS technology and data management and analysis. Students
will learn how to compile, transform, analyze and present sources of
archaeological and historical data, and will utilize this information in
GIS for cultural resources interpretation, management and predictive
modeling. Additionally, this course is designed to reinforce best
practices for collecting spatially-related data on anthropological
archaeology projects. Restricted to students in the online GIS
Certificate program.

GIS 5935    Special Topics in Geographic Science
3 sh (may not be repeated for up to 6 sh of credit)
Focuses on various topics and cutting-edge techniques in Geographic
Information Science (GIS), both in theory and in practice. Offered
concurrently with GIS 4930; graduate students will be assigned
additional work. Permission is required. Material and supply fee will be assessed.
GIS 5938  Special Topics in GIS for Archaeology
3 sh (may not be repeated for credit)
Prerequisite: GIS 5265
This course will serve as an advanced approach to archaeological applications of GIS technology and data management and analysis. Students will learn how to compile, transform, analyze and present sources of archaeological and historical data, and will utilize this information in GIS for cultural resources interpretation, management and predictive modeling. Additionally, this course is designed to reinforce best practices for collecting spatially-related data on anthropological archaeology projects. Offered concurrently with GIS 4938; graduate students will be assigned additional work.

GIS 5945  GIS Internship
1-3 sh (may not be repeated for credit)
Supervised application of Geographic Information Science (GIS) in business, government, non-profit, educational, or other environmental organizations. Offered concurrently with GIS 4944; graduate students will be assigned additional work. Permission is required.

GIS 6005  Communicating GIS
3 sh (may not be repeated for credit)
This course begins with the basic theory of graphic design, cartography, and map production and distribution. Students then learn to communicate specific types of spatial and analytical information through maps, written and oral explanations, graphs, tables, charts, and interactive web mapping applications. Course includes lecture, hands-on exercises, written reports, and a final presentation. Restricted to students majoring in MSA Geographic Information Systems specialization.

GIS 6110  Advanced Topics in Geographic Information Science
3 sh (may not be repeated for credit)
Relational Database Management Systems (RDBMS) and their function within Geographic Information Systems (GIS). Students will integrate RDBMS, Desktop GIS and the World Wide Web to produce an interactive spatial database served over the Internet. Permission is required. Material and supply fee will be assessed. Credit cannot be received for both GIS 6110 and GEO 6159.

GIS 6555  Geographic Information Systems Management
3 sh (may not be repeated for credit)
Prerequisite: GIS 5935
This course provides practical information on the development, implementation, and operation of GIS programs and projects intended for both seasoned and aspiring GIS managers. The course focuses on planning and implementing GIS solutions for government agencies and contractors. The course combines lecture, discussion, and group exercises. An end of term project involves writing in response to real or hypothetical solicitations for a project that targets GIS tool development, implementation, and/or training to support management activities in local, regional, state, national, or international contexts. Offered Fall and Spring semesters. Restricted to students in MSA Geographic Information Systems specialization program.

GIS 6905  Directed Study
1-12 sh (may be repeated indefinitely for credit)

GIS 6955  GIS Capstone
3 sh (may be repeated for up to 6 sh of credit)
Prerequisite: GIS 6005 AND GIS 6110 AND GIS 6555
A final capstone experience for students who are nearing completion of their MSA (Geographic Information Systems specialization) program. In the first semester, students work with instructor guidance to identify and research their project client and topic, and write a background paper outlining previous research and related studies. In the second semester, students work in collaboration with local partners, faculty, or the student's current employer to develop a real-world GIS application. Working independently, students: communicate with project partners to identify project goals; acquire and prepare spatial data for GIS data analysis; communicate with project partners to assess progress; manage spatial data; and produce necessary outputs for presentation as part of a final report. This final project should affirm the student's ability to think critically and creatively, to solve practical problems, to make reasoned and ethical decisions, and to communicate effectively. The capstone course serves as documentation of the student's personal mastery of professional competencies. It is designed to be an integrative experience for MSA students in the GIS specialization. Students will submit a Capstone Course Approval Form and once approved, be permitted to register for this course. Course Restricted to students in the MSA GIS Program.

* This course may be taken prior to or during the same term.