



### Course description:

This course aims to provide students with basic concepts and methodologies of the graphical information systems trends. Students are expected to undertake approximately 100 hours of private study, including coursework, reviewing lecture notes and other material, hands on lab exercises plus submitting a project at the end of the semester. Students will complete lab exercises using ArcExplorer software from ESRI.

This software is free and available here: <http://www.esri.com/software/arcexplorer/index.html>.

### Aims of the course:

To gain a basic, practical understanding of GIS concepts, techniques and real world applications.

### Intended Learning Outcomes: (ILOs)

#### A. Knowledge and Understanding

##### A1. Concepts and Theories:

Overview of the basic GIS concepts.

List the basic terminologies of a GIS system.

##### A2. Contemporary Trends, Problems and Research:

Gain a basic, practical understanding of GIS concepts, techniques and real world applications.

##### A3. Professional Responsibility:

Learn how GIS is utilized in the larger context of business needs and IT strategies

#### B. Subject-specific skills

##### B1. Problem solving skills:

Understand the basic concepts of geography necessary to efficiently and accurately use GIS technology.

##### B2. Modeling and Design:

Understand basic GIS data concepts.

Understand basic GIS analysis concepts.

Understand the practical applications of GIS.

Understand the technical language of GIS

##### B3. Application of Methods and Tools:.

Gain practical experience using basic GIS tools.

#### C. Critical-Thinking Skills

##### C1. Analytical skills: Assess

Understand GIS as it relates to software development.

##### C2. Strategic Thinking:

Understanding the GIS career options and how to pursue them.

##### C3. Creative thinking and innovation:

Analyze and investigate some GIS models and design.

#### D. General and Transferable Skills (other skills relevant to employability and personal development)

##### D1. Communication:



## D2. Teamwork and Leadership:

Discuss several case studies and solving real-world problems through simple projects.

### Course structures:

Week	Credit Hours	ILOs	Topics	Teaching Procedure	Assessment methods
1,2	6	A1, A2	<ul style="list-style-type: none"><li>• GIS and the Information Age</li><li>• Geographic Data and the Database</li></ul>	<ul style="list-style-type: none"><li>• Lecturing with active participations.</li><li>• Problem solving.</li><li>• Cooperative learning and discussion.</li></ul>	
3,4	3	A3	<ul style="list-style-type: none"><li>• Raster and Vector Data</li></ul>	<ul style="list-style-type: none"><li>• Lecturing with active participations.</li><li>• Problem solving.</li><li>• Cooperative learning and discussion.</li></ul>	
5,6	3	B1	<ul style="list-style-type: none"><li>• Topology</li><li>• Data Entry</li></ul>	<ul style="list-style-type: none"><li>• Lecturing with active participations.</li><li>• Problem solving.</li><li>• Cooperative learning and discussion.</li></ul>	
7,8	3	B1	<ul style="list-style-type: none"><li>• Data Quality and Management</li></ul>	<ul style="list-style-type: none"><li>• Lecturing with active participations.</li><li>• Problem solving.</li><li>• Cooperative learning and discussion.</li></ul>	
9,10	3	B2, B3	<ul style="list-style-type: none"><li>• Inventory Operations</li><li>• Basic Analysis</li><li>• Advanced Analysis</li></ul>	<ul style="list-style-type: none"><li>• Lecturing with active participations.</li><li>• Problem solving.</li><li>• Cooperative learning and discussion.</li></ul>	
11,12	3	C1	<ul style="list-style-type: none"><li>• Site Suitability and Models</li></ul>	<ul style="list-style-type: none"><li>• Lecturing with active participations.</li><li>• Problem solving.</li><li>• Cooperative learning and discussion.</li></ul>	
13,14	3	C2, C3	<ul style="list-style-type: none"><li>• GIS Output</li><li>• The Future of GIS and GIS in the Future</li></ul>	<ul style="list-style-type: none"><li>• Lecturing with active participations.</li><li>• Problem solving.</li><li>• Cooperative learning and discussion.</li></ul>	
15	6	D1, D2	Projects (Research paper)	<ul style="list-style-type: none"><li>• Real-World Problem solving.</li><li>• Research topics and discussion.</li></ul>	

## References:

### A. Main Textbook:

GIS: A VISUAL APPROACH: by Bruce E. Davis, onward press, 2nd. Edition 2001.  
Various handouts and supplements supplied by the instructors.

### B. Supplementary Textbook(s):

- Some cool sites that do GIS over the Web
  - <http://www.mapquest.com>
  - <http://www.esri.com>
- Some other introductions to GIS
  - USGS GIS Tutorial - <http://www.usgs.gov/research/gis/title.html>
  - Nick Chrisman's "What is GIS?" - <http://faculty.washington.edu/chrisman/G460/Lec02.html>
  - ESRI's About GIS - [http://www.esri.com/library/gis/abtgis/what\\_gis.html](http://www.esri.com/library/gis/abtgis/what_gis.html)
  - The Essential Guide to GIS - <http://giswww.kingston.ac.uk/ESGUIDE/start.html>
  - "What is GIS?" from Australia - <http://www.dlsr.com.au/whatgis.htm>

## Assessment Methods:

Methods	Grade	Date
Mid Exam	20%	
Project work	20%	
Assignments (Homeworks/Reports /Quizzes/ Participations, ....)	10%	
Final Examination	50%	