

**Computer Information Systems Department
King Abdullah II School for Information Technology
The University of Jordan**

(MSc) Geographic Information Systems (1902754)

Instructors: Dr. Ammar Huneiti

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Course Description

The primary aim of this course is to introduce advanced Geographic Information Systems principles, theory, techniques and analysis whereby diverse kinds of geographical data are processed into new knowledge, and to support students to apply these principles and methods to diverse range of applications. The combination of theory, application and practical examples, team and individual problem-solving, report writing and oral presentation, equips students with the required skills for inputting, processing, and outputting geographic data within the scope of a GIS.

Intended Learning Outcomes:

The intended learning outcomes of this course are:

A- Knowledge and Understanding: Students should ...

- A1) Know what modules are included in a GIS and its basic operations including input output and Processing.
- A2) Understand the different applications of GISs.
- A3) Know the different kinds of geographic data types and features and remote sensing maps.
- A4) Understand the concepts of GIS themes and GIS topology.
- A5) Know basic analysis operations and quality metrics applied on digital geographic data
- A6) Know the different geographic models and the types of digital maps
- A7) Understand the different methods of digital geographic data output

B- Intellectual skills: with the ability to ...

- B1) Distinguish between GISs and other information systems
- B2) Distinguish between different digital maps data structures including raster and vector
- B3) Apply and implement a GIS topology
- B4) Use ESRI's ArcView to implement GISs for different applications and inventory operations
- B5) Input, analyze and output geographic digital data

C- Subject specific skills – with ability to ...

- C1) Use different methods to create a GIS for a specific real world application.
- C2) Verify the quality of the geographic data including tabular and maps.
- C3) Advise on the most suitable type of digital maps to use for a specific application
- C4) Improve the quality of geographic data used in a project
- C5) Implement on-the monitor map digitization

D- Transferable skills – with ability to

- D1) Plan for a GIS project including the needed data types
- D2) Manage the needed resources for a GIS project
- D3) Communicate with different external stake holders to deliver a reliable GIS
- D4) Build professional GISs

Course Contents:

Content	Text Book Chapter	Week(s)	Assessment Method
1. Introduction and GIS Applications	1 + 2	1	
Principles			
2. Representing Geography	3	2	
3. The Nature of Geographic Data	4	2	
4. Georeferencing	5	1	
Techniques			
6. GIS Software	7 +Lab sessions	1	Homework
7. Geographic Data Modeling	8	2	
8. GIS Data Collection	9	1	
9. Creating and Maintaining Geographic Databases	10	2	
10. Distributed GIS	11	1	

Evaluation:

Research, Projects and/or Assignments	30%
Mid-Term Exam	30%
Final Exam	40%

Text Book:

1. **Geographic Information Systems and Science.** P. A. Longley et al, 2nd Edition, WILEY, 2005

References:

1. **An Introduction to Geographic Information Systems**, 3rd Edition, I. Heywood, S. Cornelius, S. Carver., Prentice Hall, 2006.
2. **GIS: A Visual Approach**, 2nd Edition, Bruce E. Davis. Onword Press, Thomson Learning,
3. **ArcView 9.1 Documentation**, ArcGIS ESRI. www.esri.com.
4. <http://www.gis.com/>
5. <http://earth.google.com/>

Journals:

1. **International Journal of Geographic Information Systems**
2. **IEEE transactions on Geoscience and Remote Sensing**

Please Note: the course outline and other learning resources are also available on the University e-learning system(elearning.ju.edu.jo) and Blackboard web site <http://blackboard> login and password: 1902441_std1 and go to MSc GIS folder