

**The University of Jordan**  
**Accreditation & Quality Assurance Center**

**Course Syllabus**

**Course Name:**

**Geographic**  
**Information**  
**Systems**  
**(0335442)**

<b>1</b>	Course title	Introduction to Geographic Information Systems
<b>2</b>	Course number	0305313
<b>3</b>	Credit hours (theory, practical)	1
	Contact hours (theory, practical)	Practical 3
<b>4</b>	Prerequisites/corequisites	Remote Sensing Techniques (0335441)
<b>5</b>	Program title	Bachelor of Geology
<b>6</b>	Program code	
<b>7</b>	Awarding institution	The University of Jordan
<b>8</b>	Faculty	Science
<b>9</b>	Department	Geology
<b>10</b>	Level of course	4 <sup>th</sup> Year
<b>11</b>	Year of study and semester (s)	2016-2017 / Second Semester
<b>12</b>	Final Qualification	(B.Sc.) Bachelor of Geology
<b>13</b>	Other department (s) involved in teaching the course	
<b>14</b>	Language of Instruction	English
<b>15</b>	Date of production/revision	2017

#### 16. Course Coordinator:

Name: Dr. Hussam Al-Bilbisi  
Office numbers: 310  
Office hours: TBD Later  
Phone numbers: 24967  
Email addresses: hbilbisi@ju.edu.jo

#### 17. Other instructors:

*Office numbers, office hours, phone numbers, and email addresses should be listed.*

#### 18. Course Description:

*As stated in the approved study plan.*

Students study the principles of Geographic Information Systems, covered topics include: fundamentals of GIS; introduction to modern spatial data and structures; input of Geospatial data; functions of geographic information systems; spatial Analysis; coordinate transformation and map projection; interpolation techniques; relations between GIS and remote sensing; and applications of geographic information systems to a variety of environmental and geologic issues.

## 19. Course aims and outcomes:

### A- Aims:

The aim of this course is to give the students an understanding of the following scientific knowledge:

- The basic principles of geographic information systems (GIS) science.
- Geospatial Data types used in GIS.
- The principles and methods of GIS data processing.

**B- Intended Learning Outcomes (ILOs):** Upon successful completion of this course students will be able to:

Academic skills: Students will be able to:

- Understand the basic principles of modern spatial data and structures.
- Understand the theoretical concepts of digital input of Geospatial data; functions of geographic information systems.

Practical Skills: Students will be able to:

- Use GIS software.
- Understand Data quality and management: Errors, accuracy, precision and scale.
- Perform practical applications in GIS that highlight the technical skills of the student.

## 20. Topic Outline and Schedule:

Week	Topic	Hours
1-2	Fundamentals of GIS, include: Definition of GIS. Why is a GIS needed. Required functions for GIS. Computer systems for GIS. GIS as a multi-disciplinary science. Areas of GIS applications. GIS for decision support.	6
3-4	Data models and structure, include: Vector and Raster model. Geometry and Topology of Vector data. Topological data structure. Topological relations between spatial objects. Geometry and Topology of Raster data. Topological features of Raster data. Thematic data modelling. Data structure for digital surface model.	6
5-6	Input of Geospatial data, include: Required data sources for GIS. Tablet digitizer for vector data input. Scanners for raster data input. Rasterization. Vectorization.	6
7	The Concept of Spatial Database.	3
8	Required Hardware and Software of GIS, include: Required computer systems in GIS. Required characteristics of GIS hardware and software.	3
9	Plan for GIS Installation, include: Installation planning. Strategic purpose. Planning proposal. Description of information products. Summary of Master Input Data List (MIDL). Data design. Cost-benefit analysis. Implementation plan.	3
10-12	Spatial Analysis, include: Definition of spatial analysis. Query. Reclassification. Coverage building. Overlay of Raster data. Overlay of Vector data. Connectivity analysis. Shape analysis and measurement.	9
13	Coordinate transformation, include: Importance of coordinate transformation. Typical coordinate transformation. Normalization of map frame. Map projection.	3
14	Interpolation Techniques, include: Principle of interpolation. Point-wise interpolation. Curve fitting. Surface fitting.	3
15-16	Applications using GIS and Digital Maps Layout Techniques.	6

## 21. Teaching Methods and Assignments:

Development of ILOs is promoted through the following teaching and learning methods:

- Motivate the creative thinking through lectures, practical classes and discussion.
- Students are expected to use the material presented on e-learning system and to read the relevant sections of prescribed and recommended textbooks as well as references provided by lecturers.
- Perform practical exercises using remote sensing software for different geological and environmental applications.

## 22. Evaluation Methods and Course Requirements:

Opportunities to demonstrate achievement of the ILOs are provided through the following assessment methods and requirements:

- Class discussions, practical skills of Lab. exercises, performances, quizzes, and exams.

## 23. Course Policies:

A- Attendance policies:

Students are expected to be in class on time. The University allows students to be absent up to 15% of the total number of lectures

B- Absences from exams and handing in assignments on time:

In case of absence in exams because of sickness, only reports issued directly from a public clinic or hospital will be accepted. Reports should be produced within a week after the exam.

C- Health and safety procedures:

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D- Honesty policy regarding cheating, plagiarism, misbehavior:

Cheating, plagiarism, and misbehavior will not be tolerated in class or during examinations and will be dealt with according to the university's regulations

E- Grading policy:

Mid-Term Exam	20%
Lab Exam and Practical Reports	30%
Final Exam	50%

F- Available university services that support achievement in the course:

## 24. Required equipment:

- Computer based laboratory

- GIS Software, such as; ARC GIS

**25. References:**

A- Required book (s), assigned reading and audio-visuals:

Heywood, I., Cornelius, S., and Carver S. 2012. An Introduction to Geographical Information Systems, Prentice Hall. U.S.A.

B- Recommended books, materials, and media:

- Kasianchuk P., Taggart M. 2013. Introduction to ArcGIS. Version 10.1. ESRI Publications. U.S.A.
- George B., Korte, pe, 2005. The GIS Book, 5th. Edition. Thomson Delmar Learning. U.S.A. **Note: You can read this book through Internet: (Website)**  
[http://books.google.jo/books?id=\\_C6oPvJ5S\\_EC&printsec=frontcover&hl=en](http://books.google.jo/books?id=_C6oPvJ5S_EC&printsec=frontcover&hl=en)

**26. Additional information:**

Name of Course Coordinator: Dr Hussam Al-Bilbisi      -Signature: ----- Date: -----

----- Head of curriculum committee/Department: ----- Signature: -----

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Head of Department: ----- Signature: -----

Head of curriculum committee/Faculty: ----- Signature: -----

Dean: ----- -Signature: -----

Assurance

Copy to:  
Head of Department  
Assistant Dean for Quality

Course File