

**Faculty of Engineering & Technology**  
**Elective 11/ Computer -Aided Information (GIS)**

**Information :**

**Course Code :** ARC E11

**Level :** Undergraduate

**Course Hours :** 3.00- Hours

**Department :** Department of Architectural Engineering

**Instructor Information :**

Title	Name	Office hours
Lecturer	DINA MAHMOUD ABDELRAHMAN NOSEIR	2
Assistant Lecturer	BASMA MOHAMED NAGIB IBRAHIM KHALIFA	

**Area Of Study :**

This course aims at:

Expanding the student's awareness of the basic concepts of spatial analysis (raster and vector data) and GIS data management.

Train the student to use GIS applications such as ArcGIS software.

**Description :**

Data collection : Remote sensed images, Characteristics, Rectification, Spatial and spectral enhancement, Classification and Vectorization . Data analysis: Features elements (Vector/raster) cleaning, Attributes, Topology and query . Map production : Data extraction and Symbolizing features.

**Course outcomes :**

**a.Knowledge and Understanding: :**

1 -	a1. Define basic concepts of spatial analysis (raster and vector data) and GIS data management
2 -	a2. List some different types of data analysis such as roads network analysis, natural hazard, culture resources, land cover and land ownership.
3 -	a3. Define the information modeling process.

**b.Intellectual Skills: :**

1 -	b1. Analyze spatial data.
2 -	b2. Differentiate between vector and raster spatial data.

**c.Professional and Practical Skills: :**

1 -	c1. Visualize Data into forms.
2 -	c2. Use geographic information system software ArcGIS 10.5 to build information model.
3 -	c3. Manage geographic problems with GIS software

**d.General and Transferable Skills: :**

1 -	By the end of this course the student should demonstrate fair ability to: d1. Use Google maps
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### **Course Topic And Contents :**

<b>Topic</b>	<b>No. of hours</b>	<b>Lecture</b>	<b>Tutorial / Practical</b>
Introduction to remote sensing as spatial data source	4	2	2
Characteristics of satellite raster data as the most important GIS data capture	4	2	2
What is geographic information science and how does it relate to the use of GIS for scientific purposes Urban planning project	4	2	2
What exactly geographic information analysis	8	4	4
Vector and raster data structures	4	2	2
Geospatial data and its representation vector model and its topology	16	8	8
Georeferencing, projection and coordinate system	12	6	6
Geographic data model, Digital Elevation Model (3D raster analysis)	4	2	2
Regional planning final project	4	2	2

### **Teaching And Learning Methodologies :**

Lectures.

Practical Work.

### **Course Assessment :**

<b>Methods of assessment</b>	<b>Relative weight %</b>	<b>Week No</b>	<b>Assess What</b>
Assignments	20.00		
Attendance and evaluation.	10.00		
Final Exam.	40.00		
First midterm exam.	10.00		
Second midterm exam.	20.00		

### **Course Notes :**

No Course notes

### **Recommended books :**

1. Text Book:  
by Longley, Goodchild, Maguire, and Rhind, Geographic Information Systems and Science, 2nd Edition, Wiley or ESRI Press, 2017.
2. ESRI web site ( <http://www.esri.com>
3. An Electronic form of the Course Notes and all the slides of the Lectures is available on the Students Learning Management System (Moodle).
4. Handouts

### **Periodicals :**

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**Web Sites :**

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