

**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

**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 -	d1. Use Google maps
-----	---------------------

**Course Topic And Contents :**

Topic	No. of hours	Lecture	Tutorial / Practical
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

### **Course Topic And Contents :**

Topic	No. of hours	Lecture	Tutorial / Practical
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 :**

Methods of assessment	Relative weight %	Week No	Assess What
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 :**

-

### **Web Sites :**

-