Faculty of Computers and Information Technology

Geographical Information Systems

Information :

Course Code :	IS424	**Level :**	Undergraduate	**Course Hours :**	3.00- Hours

Department : Department of Information Systems

Instructor Information :

Title	Name	Office hours
Professor	Safaa Mohamed Hassan Said	5
Professor	Safaa Mohamed Hassan Said	5
Professor	Safaa Mohamed Hassan Said	5
Assistant Lecturer	Mohamed Mahmoud Hasan Hamada	1
Assistant Lecturer	Mohamed Mahmoud Hasan Hamada	1

Area Of Study :

Introduce the fundamental concepts and theories of geographic information systems including remote sensing.
Combine an overview of the general principles of GIS with a theoretical treatment of the nature and analytical use of spatial information.
Use basic mathematics and science in computing of geographic information systems.
Use the needed knowledge and skills in the computing and information market.
Define the operational, strategic and practical issues in geographic information systems currently relevant to small, medium and large enterprises.
Deal with environmental and economic implications of GIS applications in industry.
Use effectively communication skills.

Description :

This course introduces the fundamental concepts underlying computerized geographic information systems (GIS). It combines an overview of the general principles of GIS with a theoretical treatment of the nature and analytical use of spatial information. The course has a laboratory component, which introduces students to the ArcGIS software package

Course outcomes :

a.Knowledge and Understanding: :	
1 -	Describe basic concepts of spatial analysis (raster and vector data) and GIS data management.
2 -	Identify data such as roads network analysis, natural hazard, culture resources, land cover and land ownership.
3 -	Explain vector and raster spatial data
b.Intellectual Skills: :	
1 -	Analyze proficiency in communicating objectives and results of research and production conducted with GIS
2 -	Use GIS software to become competent in solving problems with spatial analysis.
3 -	Evaluate the solutions of different problems using GIS mapping software

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c.Professional and Practical Skills: :	
1 -	Use geographic information system software ArcGIS 10.4 to become competent in solving problems with spatial analysis.
2 -	Manipulate spatial data to make an informed decision.
3 -	Solve geographic problems with GIS software.
d.General and Transferable Skills: :	
1 -	Work the course project in a team effectively and efficiently considering time and stress management
2 -	Apply communication skills and techniques to solve a real world problems using GIS technology.
3 -	Search for information about the relation between map and different databases

ABET Course outcomes :	
1 -	Demonstrate adequate understanding of fundamental concepts and theories of geographic information systems including remote sensing
2 -	Apply basic mathematics and science in computing of geographic information systems
3 -	Demonstrate adequate understanding of the operational, strategic and practical issues in geographic information systems currently relevant to small, medium and large enterprises
4 -	Demonstrate adequate understanding of the environmental and economic implications of GIS applications in industry

Course Topic And Contents :

Topic	No. of hours	Lecture	Tutorial / Practical
Introduction to remote sensing and Spatial data source.	4	2	2
Characteristics of satellite raster data	4	2	2
The most important GIS data capture	4	2	2
Geographic information science, use of GIS for scientific purposes.	4	2	2
Geographic information definition, why it is important and what is specific about it.	4	2	2
Vector and raster data structures.	4	2	2
Geospatial data, its representation vector model and its topology (join and relate database).	4	2	2
Georeferencing, projection and coordinate system.	4	2	2
Mid-Term Exam	2		
Geographic data model (raster data model)	4	2	2
Vector data model	4	2	2
Database management systems	4	2	2
Final project discussion	4	2	2
Final Exam	2		

Teaching And Learning Methodologies :
Interactive Lectures including Discussions
Tutorials
Practical Lab Sessions
Self-Study (Project / Reading Materials / Online Material / Presentations)

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Case Studies
Problem Solving

Course Assessment :

Methods of assessment	Relative weight %	Week No	Assess What
Assignments	10.00	2	
Final Exam	40.00	14	
Midterm Exam (s)	20.00	9	
Others (Participations)	10.00		
Quizzes	20.00	5	

Course Notes :

An Electronic form of the Course Notes and all the slides of the Lectures is available on the Students Learning Management System (Moodle)

Recommended books :

George Joseph, Fundamentals of Remote Sensing, 2nd ed. Orient Blackswan, 2005. ISBN: 978-8173715358.

Web Sites :

ESRI web site (http://www.esri.com/)
www.ekb.eg

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