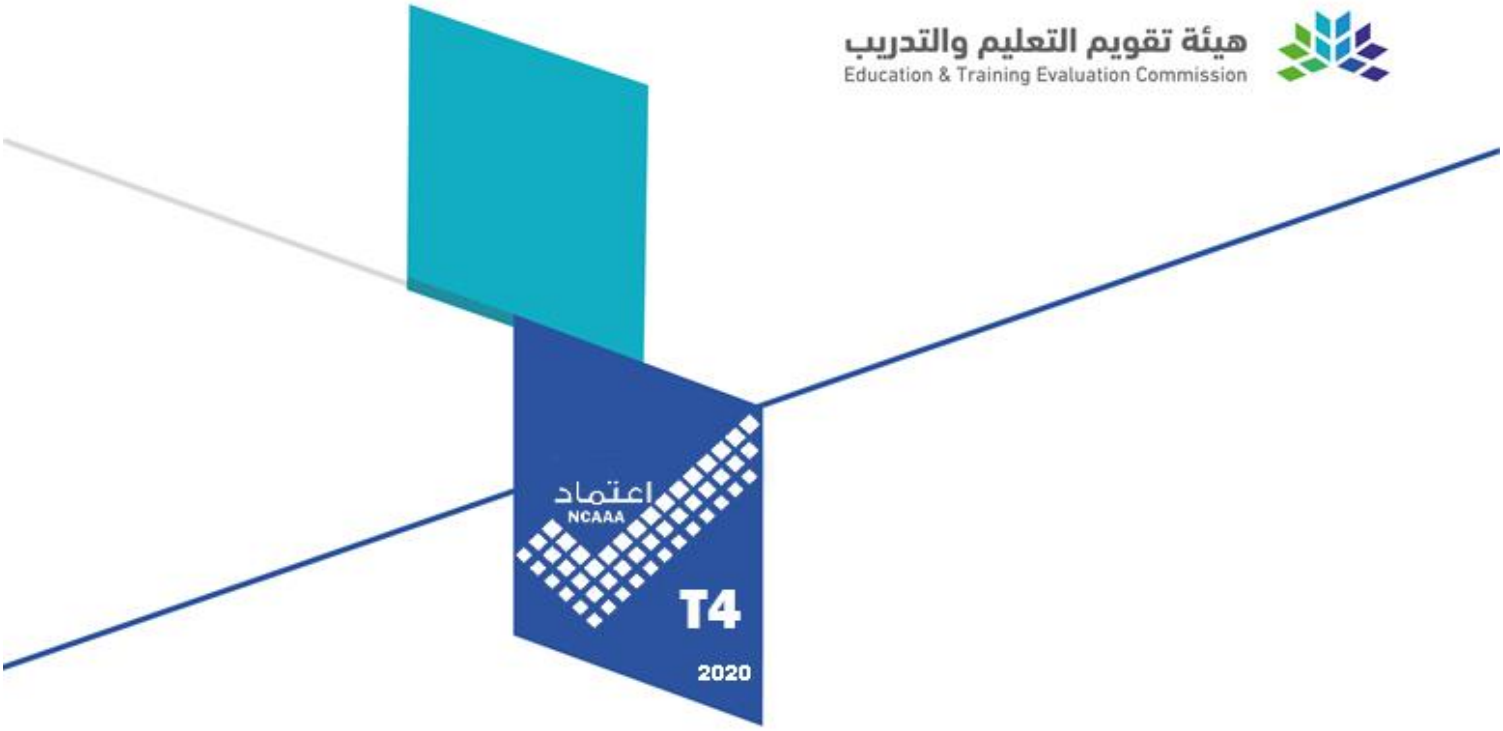
هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission



Course Specifications

Course Title:	**Geographic Information Systems**
Course Code:	**CSI 449**
Program:	Computer Science and Information Technology
Department:	**Computer Science and Information**
College:	**College of Science at AL Zulfi**
Institution:	Majmaah University

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A. Course Identification

1. Credit hours: 3(2 Lectures+2 Labs)
2. Course type **a.** University ☐ College ☐ Department ☒ Others ☐ **b.** Required ☐ Elective ☒
3. Level/year at which this course is offered: Elective
4. Pre-requisites for this course (if any)**:** • **Advanced Database (CSI 324)**
5. Co-requisites for this course (if any)**:**

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	**Traditional classroom**	48	80 %
2	**Blended**	3	5%
3	**E-learning**	3	5 %
4	**Distance learning**		0 %
5	**Other**	6	10%

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	30
2	**Laboratory/Studio**	
3	**Tutorial**	30
4	**Others** (specify)	
	Total	60

B. Course Objectives and Learning Outcomes

This course introduces fundamentals of a Geographic Information System and reviews GIS applications. Topics include data structures and basic functions, methods of data capture and sources of data, and the nature and characteristics of spatial data and objects and different geospatial operations. Upon completion, students should be able to identify typical GIS operations, products / applications, differences between database models and between raster and vector systems and the basic concepts of developments of GIS applications.
The purpose of this course is to

2. Course Main Objective

The purpose of this course is to 1. Provide students with the fundamentals of GIS and basic geospatial data manipulation skills.
2.Acquaint students to GIS components, roles, and applications.
3.Introduce students to geo-databases queries.
4.Enable students to be efficient in their work.

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	**Knowledge and Understanding**	
1.1	Define the fundamentals of GIS and develop basic geospatial data manipulation skills.	
1.2	Identify GIS components, roles, and applications	
1.3	Define fundamental skills in querying geo-databases.	
2	**Skills :**	
2.1	Interpret and analyze data qualitatively and qualitatively.	
2.2	Identify the principles and techniques of a number of application areas informed by the research directions of GIS.	
3	**Values:**	
3.1	Justify and analyze geospatial data.	
3.2	Develop GIS applications for different fields	
3.3	Work cooperatively in a small group environment.	
3.4	Save time and space in each task.	

C. Course Content

No	List of Topics	Contact Hours
1	Introduction: Introduction to Geographic Information and GIS.	4
2	Data Models: Data models, map basics, vector data – point, line and area	8
3	Geodesy and Map Projections: Basic geodesy, datums, coordinate systems, map projections.	8
4	Data Entry and Editing: Data sources, entry and editing, metadata, map transformations.	8
5	Global Navigation Satellite Systems: Map transformations, GPS	8
6	Aerial and Satellite Images, Digital Data Sources: Photos and satellite images digital data	8
7	Tables and Relational Databases: Relations databases, table manipulation	8
9	Basic Spatial Analysis: Logic Operations, General Arithmetic Operations, General Statistical Operations, Geometric operations	8
Total		60

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
1.1	Define the fundamentals of GIS and develop basic Geospatial data manipulation skills.	**Direct Teaching:** Lectures, PowerPoint slides and discussion. **Aimed Teaching** Discovery and Oral Questions.	Written Exam • Homework tasks • Quiz • Midterms • Final Exam
1.2	Identify GIS components, roles, and applications		
1.3	Define fundamental skills in querying geo-databases.		• E-learning • Internet search • Oral Exam
2.0	**Skills**		
2.1	Interpret and analyze data qualitatively and qualitatively	**Indirect Teaching:** Brainstorming - Free Discovery – Inquiry	• HW Exercises • Lab Exam • Oral Exam • Presentations
2.2	Identify the principles and techniques of a number of application areas informed by the research directions of GIS.		
3.0	**Values**		
3.1	Justify and analyze geospatial data	**Course Project: (Work group)** critical thinking and ability to seek solutions	Introduce group project and case study approaches to enable students to have an experience in problem solving situations.
3.2	Develop GIS applications for different fields		
3.3	Work cooperatively in a small group environment.		
3.4	Save time and space in each task.		

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	First written mid-term exam	6	20%
2	Second written mid-term exam	12	20%
3	Class activities, group discussions, Presentation	Every 2 weeks	5%
4	Homework + Assignments	After every Chapter	5%
5	Electronic exam	14	5%
6	Lab activities	15	5%
7	Final Exam	16	40%

***Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice :

- Determine meeting appointments for the weak' students to solve their problems and give them academic advices.
- One office hour daily
- Dealing a workshops.
- Motivate students

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	• Bolstad Paul V., "GIS Fundamentals", Book, Eider Press, 2nd edition, ISBN 0-971-76471,2005.
Essential References Materials	• Chang Kang-tsung, "Introduction to geographic information systems", Book, Mc-Graw Hill companies, 3rd edition, ISBN 0-07-060629-3, 2006.
Electronic Materials	• http://www.esri.com/what-is-gis/learn-gis •http://ocw.mit.edu/courses/urban-studies-and-planning/11-521-spatial-database- management-and-advanced-geographic-information-systems-spring-2003/index.html
Other Learning Materials	• Video and presentation are available with me

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Classroom – Laboratory + Blackboard System
Technology Resources (AV, data show, Smart Board, software, etc.)	Data show – Smart Board + Blackboard System
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Questionnaires (course evaluation) filled by the students and acquired	Students	Indirect Assessment

Evaluation Areas/Issues	Evaluators	Evaluation Methods
electronically by the University		
Students-faculty management meetings		
Departmental internal review of the course.	Department Council	Questionnaires
Discussion with the industrial partners to enhance the courses in order to meet their needs.	Stockholders	Meetings
Midterms and Final Exam	Course Coordinator Staff	Direct Assessment
Project Evaluation		

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)
Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee		
Reference No.		
Date		