جامعة المجمعة
Majmaah University

Course Specifications

Institution:	: **College of Science at Az Zulfi**
Academic Department :	**Computer Science and Information**
Programme :	Computer Science and Information
Course :	**Geographic Information Systems**
Course Coordinator :	**Noureldin Laban**
Programme Coordinator :	Dr. Yosry Azzam
Course Specification Approved Date :	22/ 12 / 1435 H

A. Course Identification and General Information

1 - Course title : **Geographic Information Systems**	Course Code: **CSI 449**
2. Credit hours :	**3** (2 Lecture + 2 Lab)
3 - Program(s) in which the course is offered:	**CSI**
4 – Course Language :	**English**
5 - Name of faculty member responsible for the course:	**Noureldin Laban**
6 - Level/year at which this course is offered : :	**Elective**

7 - Pre-requisites for this course (if any) :
- **Advanced Database (CSI 324)**

8 - Co-requisites for this course (if any) :
- **N/A**

9 - Location if not on main campus **:**
N/A

10 - Mode of Instruction (mark all that apply)

A - Traditional classroom	√	What percentage?	**80 %**
B - Blended (traditional and online)	√	What percentage?	**10 %**
D - e-learning		What percentage?	**……. %**
E - Correspondence		What percentage?	**……. %**
F - Other	√	What percentage?	**10 %**

Comments :
One-tenth of the course is presented mainly inside video lectures of other instructors worldwide. They illustrate the same topics that I introduced in my lectures with a different presentation.

B Objectives

What is the main purpose for this course?
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
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.

Briefly describe any plans for developing and improving the course that are being implemented :
1. Using group discussion
2. Updating the materials of the course to cover the new topics of the field.
3. Motivate students to manipulate spatial data that are presented in the course.

C. Course Description

1. Topics to be Covered

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

2. Course components (total contact hours and credits per semester):

	Lecture	Tutorial	Laboratory	Practical	Other:	Total
Contact Hours	**30**	**30**	....	....	....	60
Credit	**30**	**15**	....	....	....	45

3. Additional private study/learning hours expected for students per week.

5 Hours

The total workload of the student in this course is then: 60 + 5 x 15 = 135 work hours.

4. Course Learning Outcomes in NQF Domains of Learning and Alignment with Assessment Methods and Teaching Strategy

	NQF Learning Domains And Course Learning Outcomes	Course Teaching Strategies	Course Assessment Methods
1.0	**Knowledge**		
1.1	Define the fundamentals of GIS and develop basic geospatial data manipulation skills.	Lectures. Lab demonstrations. Case studies. Individual presentations.	Written Exam Homework assignments Lab assignments Class Activities Quizzes
1.2	Identify GIS components, roles, and applications.		
1.3	Define fundamental skills in querying geo-databases.		
2.0	**Cognitive Skills**		
2.1	Interpret and analyze data qualitatively and qualitatively.	Lectures. Lab demonstrations. Case studies. Individual presentations. Brainstorming.	Written Exam Homework assignments Lab assignments Class Activities Quizzes
2.2	Identify the principles and techniques of a number of application areas informed by the research directions of GIS.		
3.0	**Interpersonal Skills & Responsibility**		
3.1	Justify and analyze geospatial data.	Small group discussions. Whole group discussions. Brainstorming. Presentations.	Written Exam Homework assignments Lab assignments Class Activities Quizzes
3.2	Develop GIS applications for different fields		
4.0	**Communication, Information Technology, Numerical**		
4.1	**Work cooperatively in a small group environment.**	Small group discussions. Whole group discussions.	Written Exam Homework assignments
4.2	**Save time and space in each task.**		

		NQF Learning Domains And Course Learning Outcomes	Course Teaching Strategies	Course Assessment Methods
			Brainstorming. Presentations.	Lab assignments Class Activities Quizzes
5.0	**Psychomotor**			
5.1	**N/A**			

5. Schedule of Assessment Tasks for Students During the Semester:

	Assessment task	Week Due	Proportion of Total Assessment
1	First written mid-term exam	6	15%
2	Second written mid-term exam	12	15%
3	Presentation, class activities, and group discussion	Every week	10%
4	Homework assignments	After Every chapter	10%
5	Implementation of presented case studies.	Every two weeks	10%
6	Final written exam	16	40%

D. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week)

Office hours: Sun: Sun: 8-12, Mon. 10-12, Wed. 8-10
Office call: Sun. 12-1 and Wed 12-1

Email: n.laban@mu.edu.sa

E. Learning Resources

1. List Required Textbooks :   Bolstad Paul V., "GIS Fundamentals", Book, Eider Press, 2nd edition, ISBN 0-971-76471,2005.   •
2. List Essential References Materials :   • Chang Kang-tsung, "Introduction to geographic information systems", Book, Mc-Graw Hill companies, 3rd edition, ISBN 0-07-060629-3, 2006.   •
3. List Recommended Textbooks and Reference Material :   IEEE Transactions on Geoscience and Remote Sensing
4. List 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.htm
5. Other learning material :   • Video and presentation are available with me

F. Facilities Required

1. Accommodation   • Classroom and Lab, as those that are available at college of science at AzZulfi.
2. Computing resources   • Smart Board
3. Other resources   • N/A

G Course Evaluation and Improvement Processes

1 Strategies for Obtaining Student Feedback on Effectiveness of Teaching: • Questionnaires (course evaluation) achieved by the students and it is electronically organized by the university.   • Student-faculty management meetings.
2 Other Strategies for Evaluation of Teaching by the Program/Department Instructor :   • Discussion within the staff members teaching the course   • Departmental internal review of the course.
3 Processes for Improvement of Teaching :   • Periodical departmental revision of methods of teaching.   • Monitoring of teaching activates by senior faculty members.   • Training course.

4. Processes for Verifying Standards of Student Achievement

- Reviewing the final exam questions and a sample of the answers of the students by others.
- Visiting the other institutions that introduce the same course one time per semester.
- Watching the videos of other courses by international institutions.
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5 Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement :

- Course evaluation
- Exam evaluation
- Improvement plan

Course Specification Approved
Department Official Meeting No (6) Date 22 / 12 / 1435 *H*

Course's Coordinator

Name :   Noureldin Laban
Signature :   ....
Date :   22/ 12 / 1435 *H*

Department Head

Name :   .Dr Yossry Azzam.
Signature :   ....
Date :   22/ 12 / 1435 *H*