Course Specification
(Bachelor)

Course Title:	Geographic Information Systems
Course Code:	536CIS-3
Program:	Bachelor of Information System
Department:	Department of IS
College:	College of Computer Science and Information Systems
Institution:	Najran University
Version:	*Course Specification Version Number*
Last Revision Date:	*Pick Revision Date.*

Table of Contents

A. General information about the course:

1. Course Identification

1. Credit hours: (3)					
2. Course type					
A.	☐University	☐College	☒ Department	☐Track	Others
B.	☒ Required		☐Elective		
3. Level/year at which this course is offered: (Level 9/ Year 5)					
4. Course General Description:					

This course is to introduce students to the fundamentals of Geographic Information Systems (GIS) including basic cartographic principles, map scales coordinate systems and map projections. Students learn how to use GIS software tools to perform basic GIS tasks such as accessing, displaying, querying, and editing geographic data. In the course, students will learn the core GIS skills they need to support the organizations' missions using terminology, exercise scenarios, and data relevant to many industries.

The course focuses on giving the students a basic understanding for representation and analysis of spatial elements through a theoretical and practical approach. The course covers topics like definitions of GIS as a tool, projections and geographical reference systems, digital geographical data (maps, images, and tables), basic analysis of data in vector and raster format, presentation of geographical data in map format using applications at regional and local scales.

5. Pre-requirements for this course (if any)**:**

6. Co-requisites for this course (if any)**:**

7. Course Main Objective(s):

To provide students with fundamental concepts, skills of geographic information systems.

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	50	%100
2	E-learning		
3	Hybrid • Traditional classroom • E-learning		
4	Distance learning		

3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	**Lectures**	20
2.	**Laboratory/Studio**	20
3.	**Field**	
4.	**Tutorial**	10
5.	**Others (specify)**	
Total		50

B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
1.0	**Knowledge and understanding**			
1.1	**Explain the nature and components of GIS.**	**K1**	**TS: 1-Interactive Lectures using PowerPoint slides and explaining the essential points in more detail with the help of whiteboard. TS: 2- Encouraging the students to use the online**	**Indirect: Students CLO Survey Direct: Quizzes. Assignment. Midterm exam (Exam consists of multiple-choice questions,**
1.2	**Discuss the applications of GIS in a variety of fields.**	**K1, k2**		

Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
			links to know the concepts in detail. TS: 3 – Recall the topics discussed in the last lecture by asking questions to the students. TS: 4 – Motivating students to be active during class by asking questions regularly during the lecture. TS: 5 – Associating the topics in with the course learning outcomes (CLO).	true/false, fill in the blanks, and theoretical questions.) Final Exam - and theoretical questions.) Final Exam
2.0	**Skills**			
2.1	Compare of different map projections, coordinate systems, and geodesic reference systems	S1,S2	TS: 1-Interactive Lectures PowerPoint slides and using the whiteboard to explain the essential points in more detail. TS: 2 – Recall the topics discussed in the last lecture by asking questions to the students. TS:3 - Ask students to compare the GIS software in the market and provide features for each software.	Indirect: Students CLO Survey Direct: -Class Quizzes. -Assignment. -Midterm exam (Each exam consists of multiple choice questions, true/false, fill in the blanks, and theoretical questions. Final Exam Midterm lab exam
2.2	Develop fundamental GIS skills in a variety of areas such as data conversion and map symbology.	S2S3		

Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
			TS:4 Solving and developing issues related to data conversion using GIS tools for students to make them more familiar with various GIS software. TS:5 Let students solve digitizing and symbology problems in small groups and giving correction on their solution during class.	Final lab exam
...	Design maps using GIS	S1,S2	TS: 1- Lab Demonstrations TS: 2- Lab experiments TS: 3- Fixing and explaining the problems faced by the student during the lab session. TS: 4- Homework TS:5 Use ArcGIS to design various maps based on different requirements.	Indirect: - Students CLO Survey Direct: Lab Exam Project Lab Assignment
3.0	**Values, autonomy, and responsibility**			
3.1	Develop leadership, teamwork, self-learning in the implementation of	V1,V2	TS:1 Arrange the group discussion during the class by asking questions.	Direct: -Lab Exam -Project

Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
	the Spatial Analysis works of data.		**TS:2 - Students are guided to search the web to collect materials related to their practical tools** **TS:3 Let students Analys Spatial data for an object in small groups and giving correction on their solution during class.** **TS:4 Motivating students to be active during class by asking questions regularly.**	**-Lab Assignment** **-Through group presentation and discussion of the assignment.** **-Evaluate student as a team member in the project.**

C. Course Content

No	List of Topics	Contact Hours
1.	Introduction: Introduction to Geographic Information and GIS.	5
2.	Data Models: Data models, map basics, vector data – point, line and area.	5
3.	Geodesy: Basic geodesy, datums,	5
4.	Map Projections: coordinate systems, map projections.	5
5.	Data Entry and Editing: Data sources, entry and editing, metadata, map transformations.	5
6.	Tables and Relational Databases	5
7.	Basic Spatial Analysis	5
8.	Topics in Raster Analysis	5
9.	Interpolation and Spatial Estimation	5
10.	Data Standards and Quality	5
Total		**50**

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Assignments	4 & 8&10	%10
2.	Quizzes	6 & 10	%10
3.	Midterm Exam	8	%20
4.	Presentation	10	5%
5.	Final Lab Exam	15	10
6.	Participation		5%
7.	Final Examination	16th	40%

*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.).

E. Learning Resources and Facilities

1. References and Learning Resources

Essential References	**" GIS Fundamentals: A First Text on Geographic Information Systems, Fifth Edition 5th Edition by Paul Bolstad.**
Supportive References	**• Chang Kang-tsung, "Introduction to geographic information systems", Book, Mc-Graw Hill companies, 3rd edition, ISBN 0-07-060629-3, 2016.** **• Building a GIS: System Architecture Design Strategies for Managers, Second Edition, by Dave Peter**
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**
Other Learning Materials	

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Lecture Rooms with seats and a whiteboard or a smart board. Lab with PCs and projector
Technology equipment (projector, smart board, software)	Desktop/ Laptop computer Multimedia Projector

Items	Resources
Other equipment (depending on the nature of the specialty)	A File cabinet to keep Class Stuff, Markers, papers and students Files, and a printer to print program screenshots.

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Students	Direct
Effectiveness of Students assessment	Program Leaders	Indirect
Quality of learning resources	Peer Reviewer	
The extent to which CLOs have been achieved	Faculty	Exams, quiz, assignment
Other		

Assessors (Students, Faculty, Program Leaders, Peer Reviewers, Others (specify)

Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	**17th Department Council**
REFERENCE NO.	**14460810-0976-00017**
DATE	**10/02/2025**