هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission

2023
TP-153

Course Specification

Course Title:	**Geographic Information Systems (GIS) applications**
Course Code:	**ENW 221**
Program:	Environmental Protection Technology Diploma
Department:	--
College:	Applied College in Al-Aarda
Institution:	**Jazan University, Jazan**
Version:	1st
Last Revision Date:	**20/01/2024**

Table of Contents

A. General information about the course:

1. Course Identification

1. Credit hours: (3)					
2. Course type					
A.	☐University	☐ College	■ Program	☐Track	☐Others
B.	☒ Required		☐Elective		
3. Level/year at which this course is offered: (Level 4, 2 nd year)					
4. Course general Description:					

Effective environmental planning requires knowledge regarding Geographic Information Systems (GIS) technology. Understanding how everything is running is the first step for managing and protecting the natural environment. This course shows the importance of the use of GIS in the environmental fields. It covers subjects such as disaster management, estimation of flood damage, land use and land cover changes, management of natural resources and more. The ability of GIS for monitoring, analyzing, and modeling environmental issues and the interaction between human and natural environment are explored in the course.

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

NA

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

NA

7. Course Main Objective(s):

This course aims at giving the student knowledge in the fields:

1) Taking into account the stages of the geographic information system.

2) Explains the concept and components of geographic information systems.

3) Know the terms called geographic information systems.

4) Enumerates analysis tools and their importance.

5) Uses geographic information systems software.

6) Create information layers.

7) Draw maps using geographic information systems programs.

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	45	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**	**22**
2.	**Laboratory/Studio**	23
3.	**Field**	---
4.	**Tutorial**	---
5.	**Others (specify)**	---
Total		45

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

Code	Course Learning Outcomes	Code of PLOs aligned with program	Teaching Strategies	Assessment Methods
1.0	**Knowledge and understanding**			
1.1	**Define the concept of GIS in the environmental field.**	**K1**	**Lectures ,class assignments**	**Quizzes, individual assessment, written exams**
1.2	**understand the recent techniques of remote sensing and GIS in the environmental applications**	**K2**	**Lectures ,class assignments**	**Quizzes, Written exams**
2.0	**Skills**			

Code	Course Learning Outcomes	Code of PLOs aligned with program	Teaching Strategies	Assessment Methods
2.1	**Monitor the environmental changes using satellite images.**	**S1**	**Lectures ,class assignments**	**group work, quizzes assignments**
2.2	**Apply geographic information system for environmental conservation**	**S2**	**Lectures ,class assignments**	**Assignments Group work, Written exams**
2.3	**Assess the natural hazards and the ability to model the disasters using GIS.**	**S3**	**Practical classes**	**Assignments Group work**
2.4	**Incorporate different geospatial data to manage the natural resources using GIS**	**S3**	**Practical classes**	**Practical Assignments Group work**
3.0	**Values**			
3.1	Work with multi-disciplinary teams to communicate effectively both in written and oral forms.	**V1**	Discussions ,Group presentations	Practical Assignments Written Exams
3.2	Evaluate the use information technology related to the field .	**V2**	Discussions ,Group presentations	Practical Assignments Written Exams

C. Course Content

No	List of Topics	Contact Hours
1.	· GIS and Environment: Theory and concepts	5
2.	· Remote Sensing of Environment: Theory and concepts	4
3.	• GIS field work in the environmental fields: GPS and mobile GIS	4
4.	• GIS components and data types and structure	4
5.	• Remote sensing components and data types	4
6.	• The use of GIS for natural disaster	4
7.	• Land use and land cover change	4

8.	• The use of GIS for estimation of flood damage	4
9.	• The use of GIS for management of natural resources	4
10.	• Building a GIS structure for Environmental Impact Assessment (EIA)	4
11.	• Revision	4
Total		45

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Quizzes	Continues	5 %
2.	Mid-term exam.	9th -10th week	10 %
3.	Written Assignments	Continues	5 %
4.	Practical Assignments	15th -16th week	30 %
5.	Final Exam	16th -18th week	50 %

*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	• Aziz, Muhammad Al-Khuzama, 2002, Geographic Information Systems - Basics and Applications for Geographers, Al-Ma'arif Establishment, Alexandria. • Al-Qarni, Abdullah Muhammad, 1427 AH, Geographic Information Systems - Basic Principles and Operational Concepts, Specifications, Standards, Design and Spatial Analysis, First Edition, Publisher: Author, Riyadh. • Bolstad, P. (2019) GIS Fundamentals: A First Text on Geographic Information Systems, 6 th edition, XanEdu, USA.
Supportive References	• Demers, Michael, Modeling in Geographic Information Systems with the Cellular Model, 1432 AH, translated book, 2002 AD, translated by: Al-Ghamdi, Ali Maadah Al-Ghamdi, King Saud University, Riyadh. • The ESRI Guide to GIS Analysis, Volume 1: Geographic Patterns & Relationships. ESRI Press. (Mitchell, Andy, 1999).

	• The ESRI Guide to GIS Analysis, Volume 2: Spatial Measurements and Statistics. ESRI Press. (Mitchell, Andy, 2005) • GIS Tutorial 2: Spatial Analysis Workbook, 10.1 edition, ESRI Press, 2013
Electronic Materials	1- http://www.innovativegis.com/basis/MapAnalysis/
Other Learning Materials	---

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	**· A Lecture room for group of 60 students which has a teaching board and projector and internet access**
Technology equipment (projector, smart board, software)	**· A data show with smart Board.** **· Access to internet.**

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Students, Peer and program leader	Direct
Effectiveness of Students' assessment	Students, Program assessment committee	Direct/ Indirect
Quality of learning resources	Students, Faculty members	Indirect
The extent to which CLOs have been achieved	Instructor	Direct
Other		

Assessors (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	---
REFERENCE NO.	---
DATE	**03\06\2024**