Course Name (English)	SPATIAL ENVIRONMENTAL INFORMATION `APPROVED`
Course Code	EVT521

MQF Credit	3

Course Description	This course is intended to provide an introduction to the science and resources ofenvironmental databases. Students will be introduced to a number of case studies to explore the wide range of GIS applications, but gain depth in selected areas through hands-on projects. Topics will include application using GIS in environmental management such as conservation and natural resources, hazard management, environmental monitoring assessment, land use planning and ecology.

Transferable Skills	Spatial Geographical Information System processing

Teaching Methodologies	Lectures, Lab Work, Discussion, Presentation

CLO		
	CLO1	Describe the concept of spatial environmental information
	CLO2	Analyze real world information into spatial and non-spatial data
	CLO3	Display the skill of applying a spatial data on selected environmental information

Pre-Requisite Courses	No course recommendations

Topics
1. Course Overview and Objectives 1.1) Features and functions 1.2) Why GIS is important? 1.3) How GIS is applied? 1.4) Historical development of GIS 1.5) Spatial data handling
2. GIS and Maps, Map Projection and Coordinate Systems 2.1) Map and their characteristics Prevention 2.2) Automated cartography versus GIS 2.3) Principles and Approach of loss prevention 2.4) Projections and coordinates systems
3. Spatial Data Model 3.1) Concepts of data model 3.2) Characteristic of spatial data
4. Raster and Vector data 4.1) Raster 4.2) Vector
5. Topology 5.1) Topology and features characteristics 5.2) Element in Topology
6. Data Input and Data Quality 6.1) Major data sources to GIS and their characteristic 6.2) Map, GPS, image 6.3) Data format and data quality 6.4) Metadata

7. Database Concepts
7.1) Database concepts
7.2) Flat files
7.3) Relational databases systems
7.4) Databases and GIS
7.5) Database approach

8. Spatial Analysis
8.1) Measurement
8.2) Queries
8.3) Reclassification
8.4) Neighborhood Functions
8.5) Data Overlay
8.6) Interpolation
8.7) Surface Analysis
8.8) Network Analysis

9. Analytical modeling
9.1) Process Modeling
9.2) Environmental Processes
9.3) Human Processes
9.4) Decision-Making Processes
9.5) Problems with Process Modeling in GIS

10. Data quality issues
10.1) Introduction
10.2) Describing Data Quality
10.3) Sources of Error
10.4) Sources of Error
10.5) Finding and Managing Error

11. GIS Output
11.1) Three Views of a GIS
11.2) A GIS can be viewed in three ways
11.3) Selecting the right data
11.4) GIS presentation and output
11.5) General elements of Maps
11.6) Types of Maps
11.7) Map elements

12. GIS Applications
12.1) Observations of natural systems
12.2) Natural resource exploration & assessment
12.3) Environmental monitoring & assessment

Assessment Breakdown	%
Continuous Assessment	60.00%
Final Assessment	40.00%

Details of Continuous Assessment	Assessment Type	Assessment Description	% of Total Mark	CLO
	Assignment	Written Report on selected environmental issue	6%	CLO3
	Lab Exercise	Lab presentation work	24%	CLO3
	Presentation	Task need to accomplish in a small group that consists 3-4 members	6%	CLO1
	Test	Test 1	12%	CLO1
	Test	Test 2	12%	CLO2

Reading List	Reference Book Resources	• Demers, M.N. 2003, *Fundamentals of geographic information system*, 2 Ed., , John Wiley. New York.
Article/Paper List	This Course does not have any article/paper resources	
Other References	This Course does not have any other resources	