Liverpool John Moores University

Title:	GIS: ANALYSIS AND APPLICATIONS
Status:	Definitive
Code:	**6007GEOG** (114516)
Version Start Date:	01-08-2011
Owning School/Faculty:	Humanities and Social Science
Teaching School/Faculty:	Humanities and Social Science

Team	Leader
James Hollinshead	Y

Academic Level:	FHEQ6	**Credit Value:**	12.00	**Total Delivered Hours:**	34.00
Total Learning Hours:	120	**Private Study:**	86		

Delivery Options
Course typically offered: Semester 1

Component	Contact Hours
Lecture	14.000
Workshop	20.000

Grading Basis: 40 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Technology	task	task has 3 submission dates: 18/11/11, 20/12/11. 13/01/12	100.0	

Aims

1. To provide experience of and training in higher-level GIS analytical functions.
2. To extend appreciation and use of GIS data sources.
3. To establish appropriate working methodologies for the use of data and metadata in GIS.

Learning Outcomes

After completing the module the student should be able to:

1 Carry out spatial analysis using appropriate software (A1).
2 Gather data appropriate for use in GIS analysis (A2).
3 Understand the importance of data quality and the need for metadata (A2).
4 Evaluate real-world applications of GIS technology (A2&3).
5 Undertake her/ his own GIS project through to feasibility report stage (A1,2&3).

Learning Outcomes of Assessments

The assessment item list is assessed via the learning outcomes listed:

Technological task	1	2	3	4	5

Outline Syllabus

Data sources, metadata and quality control for GIS; internet sources
Spatial resolution, tolerances and scale
Topology, topological relationships and spatial analysis
Software availability: ArcView,ArcGIS9, ERDAS Imagine; importing and exporting data
Spatial analysis for raster and vector data
Integrating raster and vector approaches
Problem-solving and the basics of spatial modelling in GIS
Applications of GIS - the practitioners' view
Reporting GIS investigations.

Learning Activities

Activities include lectures and workshops on the syllabus topics. Students will undertake a feasibility study for a GIS-based investigation of a selected problem, and will be given guidance in report preparation and presentation.

References

Course Material	Book
Author	Chrisman, M. N.
Publishing Year	1997
Title	Exploring Geographic Information Systems
Subtitle	
Edition	
Publisher	Chichester, Wiley.
ISBN	

Course Material	Book
Author	DeMers, M.

Publishing Year	1997
Title	Fundamentals of Geographic Information Systems
Subtitle	
Edition	
Publisher	Chichester, Wiley.
ISBN	

Course Material	Book
Author	Gatrell, A. & Loyten, M.
Publishing Year	1998
Title	GIS for Health
Subtitle	
Edition	
Publisher	London, Taylor & Francis.
ISBN	

Course Material	Book
Author	Green, D.
Publishing Year	1999
Title	GIS
Subtitle	A Source Book for Schools.
Edition	
Publisher	London, Taylor & Francis.
ISBN	

Course Material	Book
Author	Johnston, C. A.
Publishing Year	1998
Title	GIS and Ecology
Subtitle	
Edition	
Publisher	Oxford, Blackwell.
ISBN	

Course Material	Book
Author	Krygier, J. & Wood, D.
Publishing Year	2005
Title	Making Maps
Subtitle	A Visual Guide to Map and Design for GIS.
Edition	
Publisher	London, Guilford.
ISBN	

Course Material	Book
Author	Longley, P. A. Goodchild, M. F. Maguire, W.J. & Rhind, D. W.
Publishing Year	2005

Title	GIS and Science
Subtitle	
Edition	2nd Ed
Publisher	Chichester, Adams/Wiley.
ISBN	

Course Material	Book
Author	Mitchell, A.
Publishing Year	1999
Title	The ESRI Guide to GIS Analysis' Redlands: Vol 1
Subtitle	Geographic Patterns and relationships.
Edition	
Publisher	Redlands CA, ESRI.
ISBN	

Course Material	Book
Author	Mitchell, A.
Publishing Year	1999
Title	The ESRI Guide to GIS Analysis' Redlands: Vol 2
Subtitle	Spatial Measurements and Statistics.
Edition	
Publisher	Redlands CA: ESRI.
ISBN	

Course Material	Book
Author	Wang, F.
Publishing Year	2006
Title	Quantitative Methods and Applications in GIS
Subtitle	
Edition	
Publisher	London, Taylor & Francis.
ISBN	

Notes

This module builds upon the Level 2 module: Managing Geographical Information by extending the range and depth of GIS applications. Students are expected to carry-out an evaluative exploration using ArcView. A basic familiarity with ArcView software is required (covering eg, mapping procedures, presentation using LAYOUT, spatial and non-spatial select, main functions of GeoProcessing).

Geographic information systems have emerged in the last decade as an essential tool for urban and resource planning and management. Their capacity to store, retrieve, analyse, model and map large areas with huge volumes of spatial data has led to an extraordinary proliferation of applications.Â Functions of GIS include: data entry, data display, data management, information retrieval and analysis. A more comprehensive and easy way to define GIS is the one that looks at the disposition, in layers (Figure 1), of its data sets. "Group of maps of the same portion of the territory, where a given location has the same coordinates in all the maps included in the system". This way, it is possible to analyse its thematic and spatial characteristics to obtain a better knowledge of this zone. Geographic Information Systems (GIS) helps us understand what belongs where.Â What is GIS? Geographic Information Systems (GIS) store, analyze, and visualize data for geographic positions on Earthâ€™s surface. GIS is a computer-based tool that examines spatial relationships, patterns, and trends. By connecting geography with data, GIS better understands data using a geographic context. The 4 main ideas of Geographic Information Systems (GIS) are: Create geographic data. Manage it in a database. Geographical Information Systems (GIS) can help making crop protection more sustainable. This chapter describes two possible examples of how GIS is used by the Central Institute for Decision Support Systems (DSS) in Crop Protection (German acronym ZEPP) to support farmers in Germany with their pesticide applications. The first example describes a DSS that creates machine readable application maps using a web based GIS application.Â This article focuses on the application of Geographical Information Systems (GIS) techniques in exploring geographic patterns of major urban transport activities at both urban and regional scales. The first part in this article develops GIS methods to analyse geographical pattern of commuting transport at a regional level. A geographic information system (GIS), or geographical information system, captures, stores, analyzes, manages, and presents data that is linked to location. Technically, GIS is geographic information systems which includes mapping software and its application with remote sensing, land surveying, aerial photography, mathematics, photogrammetry, geography, and tools that can be implemented with GIS software. Still, many refer to "geographic information system" as GIS even though it doesn't cover all GEOGRAPHIC INFORMATION SYSTEMS A geographic information system (GIS) is capable of performing virtually any conceivable operation on geographic information, from editing and compilation through analysis, mining, and summary to visualization and display. Geographic information is a particularly well-defined type of information, since it refers specifically to the surface and near-surface of the Earth, linking observations and measurements to specific locations (to all intents and purposes geospatial is synonymous with geographic).Â Exploring geographic information systems. New York: Wiley. Clarke, K. C. (1999). Getting started with geographic information systems. 2.