

Module Code	Pre-requisite Module codes	Co-Requisite Modules code(s)	ISCED Code	Subject Code	ECTS Credits	NFQ Level (CPD)#
CMPU4031					5	8
Module Title	Geographic Information Systems					

Geographic Information Systems

School Responsible:	School of Computing
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Module Overview:

A Geographical Information System (GIS) is a computer system designed to facilitate the collection, management, and analysis of large volumes of geographical knowledge. This module will focus on the fundamental principles of GIS, the practical techniques of implementing a GIS and the creation and use of a GIS for spatial analysis.

The module aims to take students from no prior knowledge of GIS to a position where they (i) understand the role and current state of the art in Geographical Information Systems, (ii) can analyse a problem in GIS and build an appropriate solution and (iii) are familiar with the basic techniques of spatial analysis and modelling.

Learning Outcomes (LO):

On Completion of this module, the learner will be able to

1	Understand the role of GIS and its application in solving practical problems
2	Understand how geographic data is represented in a computer
3	Understand the unique character of geographic data and how this is mapped to the real world
4	Be able to confidently use a GIS package
5	Understand the rudiments of spatial databases and when and where to use database technology
6	Understand how GI data is created and acquired and be aware of possible sources of data
7	Understand the art and science of cartography and map design
8	Solve problems in spatial analysis especially in the areas of visualization, query/measurement and design/modelling.

Indicative Syllabus:

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<p>Introduction to GIS</p> <p>Spatial data</p> <p>Spatial data modelling</p> <p>Spatial data storage and representation</p> <p>Introduction to Spatial Databases</p> <p>Maps and cartography</p> <p>Spatial Analysis</p> <p>Input, editing and validation</p> <p>Work-flows and introduction to GIS modelling</p> <p>Advanced GI modelling</p> <p>Creating Technical Infrastructure for GIS</p> <p>Introduction to GIS Programming</p> <p>Introduction to Web Mapping</p>

Learning and Teaching Methods:	
The course delivery involves a combination of lectures and labs which may incorporate the use of blended learning techniques as appropriate throughout the delivery.	
Total Teaching Contact Hours	39
Total Self-Directed Learning Hours	61

Module Delivery Duration:
This module is delivered over one semester

Assessment		
Assessment Type	Weighting (%)	LO Assessment (No.)

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Final Exam	60	1-8
In class examination	40	1-8
Module Specific Assessment Arrangements (if applicable)		
(a) Derogations from General Assessment Regulations		
(b) Module Assessment Thresholds		
(c) Special Repeat Assessment Arrangements		

Essential Reading: (author, date, title, publisher)

An Introduction to Geographical Information Systems (4th Edition)
 Ian Heywood, Sarah Cornelius, Steve Carver
 Publisher: Prentice Hall; 4 edition (2012) ISBN: 978-0273722595

Introduction to Geographic Information Systems (5th Edition)
 Kang-Tsung Chang
 Publisher: McGraw-Hill; 5 edition (2010) ISBN: 978-0071267588

Supplemental Reading: (author, date, title, publisher)

A Gentle Introduction to GIS
http://docs.ggis.org/2.14/en/docs/gentle_gis_introduction/

QGIS Training Manual
http://docs.ggis.org/2.14/en/docs/training_manual/

Version No:		Amended By	
Commencement Date		Associated Programme Codes	

Modules that are to be offered as Stand-Alone CPD Programmes must have an NFQ level assigned

*Details of the assessment schedule should be contained in the student handbook for the programme stage.

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Date of Academic Council approval

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