TECH08063
Geographical Information Systems 1

Full Title	Geographical Information Systems 1		
Status	Uploaded to Banner	Start Term	2020
NFQ Level	08	ECTS Credits	05
Module Code	TECH08063	Duration	Semester - (13 Weeks)
Grading Mode	Numeric	Department	Business, Humanities and Tech
Module Author	Emer Crean		

Module Description

This module will serve as an introduction to the concepts and practical usage of GIS. Students will gain hands-on experience of the fundamental functions of GIS software through the collation, analysis and presentation of datasets and the design of static maps. No prior experience of GIS is required.

Learning Outcomes
On completion of this module the learner will/should be able to:

1.	Demonstrate their understanding of the concepts that underpin Geographical Information Systems.
2.	Use GIS to import, display and investigate spatial data.
3.	Create and edit vector datasets.
4.	Create static maps using established design principles.
5.	Demonstrate skills in basic GIS analytical functions

Indicative Syllabus

Introduction to GIS 10%

The student will examine the fundamentals of GIS; origins, relevance, functions, software and applications of GIS, how geographic features are represented, data models and data formats. How to find support resources on the web.

Managing data in a GIS 10%

This will involve learning how to navigate the GIS application interface; import data of different models and formats, layer management, layer visibility, map navigation, feature selection methods, layer export, basic labelling and the display of background layers.

Spatial feature symbolisation 15%

The student will learn techniques in visualisation and symbolisation of vector datasets; classification systems, symbolisation of quantitative versus qualitative data, methodologies for thematic maps, charts and feature labelling.

Georeferencing 5%

Systems for georeferencing phenomena and features on the Earth's surface; datums, geographic and projected coordinate reference systems, systems relevant to Ireland, conversion between systems.

Cartography: Principles and Production 20%

This section will include an examination of the history of cartography, different categories of maps, principles of map design, visual variables, map elements and hands on skills in creating static maps.

Working with tabular data 20%

Students will gain understanding and skills in managing and manipulating tabular data within a GIS; create attributes, use of data calculator to modify data, join tables, geocode text data, filter and query data.

Spatial data creation 15%

Creation of point, line and polygon datasets, field survey data capture, digitisation and feature editing, basic snapping techniques.

Basic spatial queries 5%

The student will learn how to identify spatial relationships between features and layers and how to use tools that facilitate problem solving using these spatial relationships

Teaching and Learning Strategy

This module can be delivered via blended (employing both online and offline), online format or the traditional face-to-face delivery methodology.

Blended delivery format.

The module can be delivered in the blended delivery method using a mixture of online delivery (approx. 75%) and face-to-face engagement (approx. 25%).

Weekly online delivery will consist of, but not exclusive to, live lectures, practicals, webinars, pre-recordings, synchronous and asynchronous discussion forums and open educational resources (OER's), exercises and reading, accounting for approx. 4 hours per week.

Online delivery format.

The module can be delivered in an asynchronous online method. Information concerning the nature and timing of continuous assessment will be reviewed and agreed with learners and external examiners at the beginning of the academic year. Marking criteria, deadlines and expectations will also be provided to the learner in advance as appropriate. Constructive feedback will be provided in a timely manner and in an appropriate format.

Traditional face-to face delivery format.

The module can be delivered in the traditional delivery method using lectures/tutorials (1 hours per week) and lab practicals (3 hours per week).

Assessment Strategy

This module will comprise 100% continuous assessment. The learner will be assessed on their practical ability and theoretical knowledge of GIS through a combination of practical worksheet tasks, forums, quizzes and practical exams. This is appropriate given the practical nature of the topic.

Information concerning the nature and timing of continuous assessment will be reviewed and agreed with learners and external examiners at the beginning of the academic year. Marking criteria, deadlines and expectations will also be provided to the learner in advance. Constructive feedback will be provided in a timely manner and in an appropriate format.

Repeat Assessment Strategies

Repeat facilities will be accommodated in line with GMIT Code of Practice No. 3 Student Assessment: Marks & Standards procedures and in compliance with programme board decisions.

Decisions on nature of assessment will be linked to the need to achieve particular learning outcomes. They may be in the form of a written assessment, practical computer exam, project or other relevant assessment. Individuals may be interviewed or asked to present their work in a formal student conference context to prove authenticity and ownership of work.

Indicative Coursework and Continuous Assessment:		100 %		
Form	*Title*	*Percent*	*Week (Indicative)*	*Learning Outcomes*
Assessment	Practicals	40 %	OnGoing	1,2
Assessment	Assessment	60 %	OnGoing	3,4,5

Full Time Delivery Mode Average Weekly Workload:			4.00 Hours		
Type	*Description*	*Location*	*Hours*	*Frequency*	*Weekly Avg*
Lecture	Lecture	Laboratory	1	Weekly	1.00
Practical	Practical Work	Laboratory	3	Weekly	3.00

Online Learning Delivery Mode Average Weekly Workload:			4.00 Hours		
Type	*Description*	*Location*	*Hours*	*Frequency*	*Weekly Avg*
Lecture	Lecture	Online	1	Weekly	1.00
Practical	Practical Work	Online	3	Weekly	3.00

Blended Delivery Mode Average Weekly Workload:			4.12 Hours		

Type	Description	Location	Hours	Frequency	Weekly Avg
Lecture	Lecture	Online	.5	Weekly	0.50
Practical	Practical Work	Online	3	Weekly	3.00
Practical	Workshop	Laboratory	2.5	Monthly	0.62

Required Reading Book List

Goodchild, F., (2015). *Geographic Information Science and Systems*. John Wiley & Sons.
ISBN 9781118676950 ISBN-13 1118676955

Recommended Reading Book List

Heywood, I., (2011). *An Introduction to Geographical Information Systems*.
ISBN 027372259X ISBN-13 9780273722595

Peterson, G., (2020). *QGIS Map Design*. 2nd Edition. Locate Press LLC.

Bolstad, P., (2019). *GIS Fundamentals*.
ISBN 1593995520 ISBN-13 9781593995522

Tyner, A., (2014). *Principles of Map Design*. Guilford Publications.
ISBN 9781462517121 ISBN-13 1462517129

Journal Resources

Irish Geography

Geo-spatial Information Science

Transactions in GIS

Online Resources

QGIS

ESRI

Esri e-books

Geospatial World

GIS Lounge

Other Resources

Irish Association for Geographic Information

Programme Membership

GA_SGISC_S08 202000 Certificate in Digital Mapping and Geographical Information Systems