Module Descriptor

Title	Introduction to GIS		
Session	2025/26	**Status**	Published
Code	ENGG08037	**SCQF Level**	8
Credit Points	20	**ECTS (European Credit Transfer Scheme)**	10
School	**Computing, Engineering and Physical Sciences**		
Module Co-ordinator	Joseph Zhao		

Summary of Module

This module provides an introduction to Geographic Information Systems (GIS), equipping students with fundamental knowledge and skills in spatial data management and analysis, essential for town planning. The module covers key GIS concepts, techniques and applications relevant to urban planning and development. It serves as preparatory course for the Applied GIS and 3D Modelling module at SCQF Level 9, providing the necessary background to progress to more advanced GIS and spatial analysis topics.

The Graduate Attributes relevant to this module are:

- Academic: Analytical, Digitally literate, Problem-solver, Knowledgeable
- Personal: Culturally aware, Motivated, Effective communicator
- Professional: Research-minded, Socially responsible, Collaborative

Module Delivery Method	**On-Campus**[1] ☒	**Hybrid**[2] ☐	**Online**[3] ☐	**Work -Based Learning**[4] ☐
Campuses for Module Delivery	☐ Ayr ☐ Dumfries	☐ Lanarkshire ☐ London ☒ Paisley	☐ Online / Distance Learning ☐ Other (specify)	

[1] Where contact hours are synchronous/ live and take place fully on campus. Campus-based learning is focused on providing an interactive learning experience supported by a range of digitally-enabled asynchronous learning opportunities including learning materials, resources, and opportunities provided via the virtual learning environment. On-campus contact hours will be clearly articulated to students.

[2] The module includes a combination of synchronous/ live on-campus and online learning events. These will be supported by a range of digitally-enabled asynchronous learning opportunities including learning materials, resources, and opportunities provided via the virtual learning environment. On-campus and online contact hours will be clearly articulated to students.

[3] Where all learning is solely delivered by web-based or internet-based technologies and the participants can engage in all learning activities through these means. All required contact hours will be clearly articulated to students.

[4] Learning activities where the main location for the learning experience is in the workplace. All required contact hours, whether online or on campus, will be clearly articulated to students

Terms for Module Delivery	Term 1	☒	Term 2	☐	Term 3	☐
Long-thin Delivery over more than one Term	Term 1 – Term 2	☐	Term 2 – Term 3	☐	Term 3 – Term 1	☐

Learning Outcomes	
L1	Understand the key concepts and components of GIS, including spatial data structures, geo referencing and coordinate systems.
L2	Collect, organise and manage geospatial data relevant to urban planning using GIS tools.
L3	Conduct basic spatial analysis to inform planning decisions, such as site suitability analysis, network analysis and buffer analysis.
L4	Create clear and effective maps and visualisations to communicate planning data and analysis results.
L5	Understand ethical and legal implications of using GIS, including data privacy, data sharing and access.

Employability Skills and Personal Development Planning (PDP) Skills	
SCQF Headings	**During completion of this module, there will be an opportunity to achieve core skills in:**
Knowledge and Understanding (K and U)	**SCQF 8** Basic knowledge and understanding of spatial data and their role in planning. Ability to manage and analyse basic spatial data.
Practice: Applied Knowledge and Understanding	**SCQF 8** Practical skills of spatial data management and basic analysis.
Generic Cognitive skills	**SCQF 8** Support to development of critical thinking in spatial contexts. Support to develop independent research skills.
Communication, ICT and Numeracy Skills	**SCQF 8** Experience in visualising and presenting geospatial data effective through maps and reports. Building digital skills for planning.
Autonomy, Accountability and Working with Others	**SCQF 8** Working with group. Developing ethical awareness related to spatial data.

Prerequisites	**Module Code**	**Module Title**
	Other	
Co-requisites	**Module Code**	**Module Title**

Learning and Teaching

In line with current learning and teaching principles, a 20-credit module includes 200 learning hours, normally including a minimum of 36 contact hours and maximum of 48 contact hours.

The module will be delivered through a combination of lectures, practical workshops and tutorial. Lectures will cover theoretical concepts of GIS and its relevance to urban planning. In practical workshops, students will do hands-on experince with GIS software and spatial data analysis. Further, tutorial activities will be performed, closely aligned with workshops, where students will be supported in exploring real-world problems through spatial analysis.

Learning Activities During completion of this module, the learning activities undertaken to achieve the module learning outcomes are stated below:	**Student Learning Hours** (Note: Learning hours include both contact hours and hours spent on other learning activities)
Lecture / Core Content Delivery	09
Laboratory / Practical Demonstration / Workshop	27
Tutorial / Synchronous Support Activity	12
Independent Study	152
n/a	
n/a	
TOTAL	200

Indicative Resources

The following materials form essential underpinning for the module content and ultimately for the learning outcomes:

Bolstad, P. and Manson, S., 2022. GIS Fundamentals: A First Text on Geographic Information Systems (Edition 7). XanEdu Publishing Inc.

Ferrari, E. and Rae, A., 2019. GIS for planning and the built environment: an introduction to spatial analysis (Vol. 23). Bloomsbury Publishing.

(N.B. Although reading lists should include current publications, students are advised (particularly for material marked with an asterisk*) to wait until the start of session for confirmation of the most up-to-date material)

Attendance and Engagement Requirements

In line with the Student Attendance and Engagement Procedure, Students are academically engaged if they are regularly attending and participating in timetabled on-campus and online teaching sessions, asynchronous online learning activities, course-related learning resources, and complete assessments and submit these on time.

For the purposes of this module, academic engagement equates to the following:

The School of Computing, Engineering and Physical Sciences considers attendance and engagement to mean a commitment to attending, and engaging in, timetabled sessions. You will scan your attendance via the scanners each time you are on-campus and you will login to the VLE several times per week. Where you are unable to attend a timetabled learning session due to illness or other circumstance, you should notify the Programme Leader that you cannot attend. Across the School an 80% attendance threshold is set. If you fall below

this, you will be referred to the Student Success Team to see how we can best support your studies.

Equality and Diversity
The University's Equality, Diversity and Human Rights Procedure can be accessed at the following link: UWS Equality, Diversity and Human Rights Code. Aligned with the University's commitment to equality and diversity, this module supports equality of opportunity for students from all backgrounds and learning needs. Using the VLE, material will be presented electronically in formats that allow flexible access and manipulation of content. This module complies with University regulations and guidance on inclusive learning and teaching practice. This module has lab-based teaching and as such you are advised to speak to the Module Co-ordinator to ensure that specialist assistive equipment, support provision and adjustment to assessment practice can be put in place, in accordance with the University's policies and regulations.
(N.B. Every effort will be made by the University to accommodate any equality and diversity issues brought to the attention of the School)

Supplemental Information

Divisional Programme Board	**Engineering Physical Sciences**
Overall Assessment Results	☐ **Pass / Fail** ☒ **Graded**
Module Eligible for Compensation	☒ **Yes** ☐ **No** **If this module is eligible for compensation, there may be cases where compensation is not permitted due to programme accreditation requirements. Please check the associated programme specification for details.**
School Assessment Board	Engineering
Moderator	
External Examiner	TBC
Accreditation Details	None
Module Appears in CPD catalogue	☐ **Yes** ☒ **No**
Changes / Version Number	

Assessment (also refer to Assessment Outcomes Grids below)
Assessment 1
A practical assignment (70%).
Assessment 2
A computer or paper-based quiz (30%).
Assessment 3
(N.B. (i) Assessment Outcomes Grids for the module (one for each component) can be found below which clearly demonstrate how the learning outcomes of the module will be assessed. (ii) An indicative schedule listing approximate times within the academic calendar when assessment is likely to feature will be provided within the Student Module Handbook.)

Component 1							
Assessment Type	**LO1**	**LO2**	**LO3**	**LO4**	**LO5**	**Weighting of Assessment Element (%)**	**Timetabled Contact Hours**
Practical assignment	☐	☒	☒	☒	☐	70	

Component 2							
Assessment Type	**LO1**	**LO2**	**LO3**	**LO4**	**LO5**	**Weighting of Assessment Element (%)**	**Timetabled Contact Hours**
Quiz	☒	☐	☐	☐	☒	30	

Component 3							
Assessment Type	**LO1**	**LO2**	**LO3**	**LO4**	**LO5**	**Weighting of Assessment Element (%)**	**Timetabled Contact Hours**
n/a	☐	☐	☐	☐	☐		
Combined total for all components						100%	hours

Change Control

What	**When**	**Who**