Module Descriptor

Title	Advanced GIS and remote sensing		
Session	2024/25	**Status**	Published
Code	BIOL10029	**SCQF Level**	10
Credit Points	20	**ECTS (European Credit Transfer Scheme)**	10
School	**Health and Life Sciences**		
Module Co-ordinator	Kiri Rodgers		

Summary of Module

This module introduces students to the applications of remote data sensing and will advance student knowledge in geographical information systems (GIS).

The module will look at the conceptual, practical and methodological issues associated with using GIS for environmental and socio-economic applications. In addition, through the development of data processing skills, labelling and symbology applications student will gain the essential skills to produce quality cartographic reports suitable for publication.

Students will develop an understanding of remote sensing techniques by exploring different types of data sources and assessing the economics of using remote sensing. Through the development of relevant skills and knowledge, students will be able to perform data acquisition, processing, visualisation, and manipulation. Furthermore, students will have the capacity to Interpret and analysis data for environmental and sustainability applications.

By undertaking this module students will develop a range of 'I am UWS' Graduate Attributes.

Universal – development of critical thinking, ethically and research minded.

Work Ready – an effective problem solver, communicator and ambitious.

Successful – by being autonomous, resilient, and driven

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)	

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 ways in which geographical data of various types can be combined, interpreted and modelled.
L2	Analyse and critically interpret secondary geographical data
L3	Develop an understanding of remote sensing capabilities and different types of sensing platforms
L4	An ability to develop advanced map renderings, specifically 3D models and animations, using Global and Local scenes in ArcGIS.
L5	

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 10** Develop a detailed knowledge and understanding of geodatabases and advanced data manipulation and visualisation. Demonstrate a critical understanding of the principal concepts underpinning current techniques used in presenting environmental monitoring data.
Practice: Applied Knowledge and Understanding	**SCQF 10** Apply scientific knowledge to solve practical problems and demonstrate an appreciation of the benefits of both GIS and remote sensing applications.

[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

Generic Cognitive skills	**SCQF 10** Develop the ability to extract and critically analyse relevant information from published research papers.
Communication, ICT and Numeracy Skills	**SCQF 10** Abstracting relevant information from databases. Clearly and critically explain ideas gained from analysis of spoken, written and online resources. Critically analyse techniques, applications and implications, including ethical issues, of an application of GIS and remote sensing.
Autonomy, Accountability and Working with Others	**SCQF 10** Work autonomously and with others in teams to present / produce suitable results. Research and present information that will require time management, organisational skills and an understanding of professional practice.

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.	
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	12
Tutorial / Synchronous Support Activity	4
Laboratory / Practical Demonstration / Workshop	20
Independent Study	164
Please select	
Please select	
TOTAL	200

Indicative Resources
The following materials form essential underpinning for the module content and ultimately for the learning outcomes: https://www.youtube.com/playlist?list=PL0f6dPgo2jPb1BFTLfovEL4BGAcWX00mT https://www.esri.com/en-us/arcgis/products/arcgis-online/resources

(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:** Attendance to all online, on-campus classes and laboratory sessions

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.
(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	**Biological Sciences Health**
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	Biological Sciences and Health
Moderator	Roderick Williams
External Examiner	TBC
Accreditation Details	
Module Appears in CPD catalogue	☐ **Yes** ☒ **No**
Changes / Version Number	1

Assessment (also refer to Assessment Outcomes Grids below)
Assessment 1
Case study - map production (60%)
Assessment 2
Report of practical work (40%)
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**
Case study	☒	☒	☐	☐	☐	60	0

Component 2							
Assessment Type	**LO1**	**LO2**	**LO3**	**LO4**	**LO5**	**Weighting of Assessment Element (%)**	**Timetabled Contact Hours**
Portfolio of written work	☐	☐	☒	☒	☐	40	0

Component 3							
Assessment Type	**LO1**	**LO2**	**LO3**	**LO4**	**LO5**	**Weighting of Assessment Element (%)**	**Timetabled Contact Hours**
	☐	☐	☐	☐	☐		
Combined total for all components						100%	2 hours

Change Control

What	**When**	**Who**