Module Definition Form (MDF)

Module code: MOD007181	**Version:** 4 **Date Amended:** 22/Nov/2021

1. Module Title
GIS and Spatial Ecology

2a. Module Leader
Hannah White

2b. School
School of Life Sciences

2c. Faculty
Faculty of Science and Engineering

3a. Level
5

3b. Module Type
Standard (fine graded)

4a. Credits
15

4b. Study Hours
150

5. Restrictions

Type	Module Code	Module Name	Condition
Pre-requisites:	None		
Co-requisites:	None		
Exclusions:	None		
Courses to which this module is restricted:			

LEARNING, TEACHING AND ASSESSMENT INFORMATION

6a. Module Description

Modern technological developments that enable us to study the natural world include Geographical Information Systems (GIS), an invaluable tool which allows us to monitor a variety of aspects in nature, including species distribution. You will learn valuable practical skills in the use of GIS within biological sciences, includes the concepts of the system and the training on how to use the tools. You will learn how to use the software and the various techniques during practical sessions and will also apply your knowledge to relevant case studies.

During your practical sessions, you will explore a variety of online spatial data resources relevant to the study of terrestrial and marine organisms in the context of ecological and behavioural studies and wildlife conservation, at both local and global scales. These include species distribution, protected areas, habitat maps, physical and climate data, and remote sensing.

You will be introduced to free-to-use Open Source GIS software (QGIS) and will also learn to apply your Global Positioning System (GPS) skills to capture locations in the field and map them. The latest developments in tracking device technology will also be covered, and you will learn how to represent and analyse data acquired from these devices.

Knowledge of GIS and the uses of these techniques are valuable practical skills, both on this course and in your future employment in a wide range of industries due to the transferable nature of the software. Furthermore, the skills you develop in data management and analysis, scientific writing, problem solving and critical thinking will prepare you for a wide range of careers.

6b. Outline Content

Introduction and case studies

Projection, GPS and tracking devices

Spatial data manipulation

Remote sensing

Data sources

Map production

Spatial analysis

6c. Key Texts/Literature

The reading list to support this module is available at: https://readinglists.aru.ac.uk/

6d. Specialist Learning Resources

E-Learning environment, GIS software (QGIS), GPS, online resources, computer rooms

7. Learning Outcomes (threshold standards)		
No.	**Type**	**On successful completion of this module the student will be expected to be able to:**
1	Knowledge and Understanding	Have a comprehensive knowledge and understanding of GIS and spatial data in the context of biological studies.
2	Knowledge and Understanding	Identify adequate spatial data and spatial analysis techniques in the context of a biological question while being aware of their uncertainty.
3	Intellectual, practical, affective and transferrable skills	Integrate available spatial data from different sources into a GIS and run specific analytical tools for problem solving while recognising the limitations of these techniques.
4	Intellectual, practical, affective and transferrable skills	Carry out a small project by applying GIS principles and techniques in manipulating and analysing geospatial data to produce high quality cartographic and non-cartographic outputs that efficiently communicate results.

8a. Module Occurrence to which this MDF Refers				
Year	**Occurrence**	**Period**	**Location**	**Mode of Delivery**
2025/6	ZZF	Template For Face To Face Learning Delivery		Face to Face

8b. Learning Activities for the above Module Occurrence			
Learning Activities	**Hours**	**Learning Outcomes**	**Details of Duration, frequency and other comments**
Lectures	10	1-2	10 x 1 hr lectures/active learning
Other teacher managed learning	23	1-4	10 x 2 hr practicals + 3 hrs assessment literacy
Student managed learning	117	1-4	Background reading, online activities, preparation for lectures and practicals, and completion of assessments
TOTAL:	150		

9. Assessment for the above Module Occurrence					
Assessment No.	**Assessment Method**	**Learning Outcomes**	**Weighting (%)**	**Fine Grade or Pass/Fail**	**Qualifying Mark (%)**
010	Coursework	1-2	40 (%)	Fine Grade	30 (%)
Knowledge and Practical skills tests (1200 word equivalent)					

Assessment components for Element 010				
Component No.	**Assessment Title**	**Submission Method**	**Weighting (%)**	**Components needed for Mark Calculation?**
010/1	Weekly quiz	Scheduled Activity: Timetabled assessment task	10 (%)	All
010/2	Weekly quiz	Scheduled Activity: Timetabled assessment task	10 (%)	
010/3	Weekly quiz	Scheduled Activity: Timetabled assessment task	10 (%)	
010/4	Weekly quiz	Scheduled Activity: Timetabled assessment task	10 (%)	
010/5	Weekly quiz	Scheduled Activity: Timetabled assessment task	10 (%)	
010/6	Practice map	Canvas	50 (%)	

Assessment No.	**Assessment Method**	**Learning Outcomes**	**Weighting (%)**	**Fine Grade or Pass/Fail**	**Qualifying Mark (%)**
011	Coursework	1-4	60 (%)	Fine Grade	30 (%)
Report brief (1800 words equivalent)					

In order to pass this module, students are required to achieve an overall mark of 40% (for modules at levels 3, 4, 5 and 6) or 50% (for modules at level 7*).

In addition, students are required to:
(a) achieve the qualifying mark for each element of fine graded assessment as specified above
(b) pass any pass/fail elements

[* the pass mark of 50% applies for all module occurrences from the academic year 2024/25 – see Section 3a of this MDF to check the level of the module and Section 8a of this MDF to check the academic year]