

Module code: MOD011123	Version: 1 Date Amended: 17/Jun/2025
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1. Module Title
Ecosystems and Sustainable Development

2a. Module Leader
Christos Gerofotis

2b. School
Writtle School of Agriculture, Animal and Environmental Sciences

2c. Faculty
Faculty of Science and Engineering

3a. Level
4

3b. Module Type
Standard (fine graded)

4a. Credits
30

4b. Study Hours
300

5. Restrictions			
Type	Module Code	Module Name	Condition
Pre-requisites:	None		
Co-requisites:	None		
Exclusions:	None		
Courses to which this module is restricted:	BSc (Hons) Agriculture and BSc (Hons) Horticulture variants		

LEARNING, TEACHING AND ASSESSMENT INFORMATION

6a. Module Description

In this interdisciplinary module, you will bring together key concepts from climate, soil science, land use, and sustainability principles. You will gain a comprehensive understanding of how environmental systems, such as climate, soils, water and biodiversity interact with human activities, and how this complex relationship is changing over time and with socio-economic development. The scientific evidence for human-induced climate change, biodiversity loss and ecosystem degradation are comprehensive and compelling, and in this module, you will explore alternative emerging models and practices in sustainable development with a focus on land use practices. You will examine theories and explorative practices in regenerative and sustainable land use, including principles of nature-based solutions, in the context of the structures and processes found in natural systems that promote inherent growth, stability and resilience.

As the speed and extent of change experienced in the modern world is affecting planetary systems and ultimately, human wellbeing is increasing, so is the need for radical transformational solutions to prevent further breaching of planetary boundaries to avoid irreversible tipping points. In this module, you will explore key sustainability concepts and frameworks, such as complex systems theory, ecosystem theory, and the circular economy, integrating these into a unified approach to achieving the Sustainable Development Goals (SDGs). You will look at interdisciplinary strategies to tackle environmental, social, and economic challenges, and discuss the need for collaboration across disciplines to develop practical, systemic solutions for sustainable land use and urban development.

6b. Outline Content

Environmental Foundations

- Introduction to nature of ecosystems (Climate, Soils, and Plant Ecosystems)
- Plant/Animals Survivorship and Adaptation

Human induced changes and impacts to ecosystems

- Human-induced drivers of change
- Planetary boundaries and tipping points

Sustainability and Systems Thinking

- Principles of Sustainability and Sustainable Development Goals (SDGs)
- The environmental, social, and economic pillars of sustainability.
- Policy frameworks: From theory to practice.
- Introduction to complex systems theory and ecosystem theory, Ecosystem-Based Adaptive Management
- Principles and practices of the circular economy.
- Systemic solutions to sustainable land use and resource management challenges

Cross-Disciplinary Integration

- Environmental and Socio-Economic Integration
- Case Studies in Sustainable Land Management
- Practical Experiments and Field Applications
- Synthesis and Future Directions

6c. Key Texts/Literature

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

6d. Specialist Learning Resources
None

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	Understand the environmental factors and conditions that determine plant/animal distribution and survivorship on earth.
2	Knowledge and Understanding	Review current theories and evidence for growth, regeneration and resilience in natural ecosystems
3	Intellectual, practical, affective and transferrable skills	Understand the impacts of human-induced change on environmental systems
4	Intellectual, practical, affective and transferrable skills	Demonstrate a robust understanding of the applied scientific, theories and concepts underpinning sustainable development at global and national levels

8a. Module Occurrence to which this MDF Refers				
Year	Occurrence	Period	Location	Mode of Delivery
2026/7	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	72	1-4	3 hours per week of flexible learning consisting of lectures, practicals workshops and tutorials
Other teacher managed learning	6	4	Preparatory work towards summative assessment
Student managed learning	222	1-4	Self-guided learning
TOTAL:	300		

9. Assessment for the above Module Occurrence					
Assessment No.	Assessment Method	Learning Outcomes	Weighting (%)	Fine Grade or Pass/Fail	Qualifying Mark (%)
010	Coursework	1,3	60 (%)	Fine Grade	30 (%)
2 Components - Ecological diagnostic analysis: Based on site-specific in-field assessment techniques and data collection. Technical report: A brief submission report with field data analysis.					

Assessment components for Element 010				
Component No.	Assessment Title	Submission Method	Weighting (%)	Components needed for Mark Calculation?
010/1	Ecological Diagnostics Analysis		50 (%)	All
010/2	Brief technical report		50 (%)	

Assessment No.	Assessment Method	Learning Outcomes	Weighting (%)	Fine Grade or Pass/Fail	Qualifying Mark (%)
011	Coursework	1-4	40 (%)	Fine Grade	30 (%)
Group Project: A group project that proposes cross-modular synergies to a land use or environmental management problem, in a format suitable for communication to an external audience (e.g. smart poster, podcast, video, etc.)					

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]					
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