

LF265-15 Ecological Principles and Processes

26/27

Department

Life Sciences

Level

Undergraduate Level 2

Module leader

David Chandler

Credit value

15

Module duration

5 weeks

Assessment

Multiple

Study location

University of Warwick main campus, Coventry

Description

Introductory description

This module is designed to give an overview of ecological principles and processes to aid an understanding of the natural world, and to provide a foundation for later studies for students with a special interest in environmental studies.

Module aims

This module will enable students to:

1. understand key ecological principles.
2. appreciate the complexity of ecosystems and the integration of ecological processes within these systems.
3. recognise the role of environmental influences on different levels of organisations within ecosystems.

Outline syllabus

This is an indicative module outline only to give an indication of the sort of topics that may be

covered. Actual sessions held may differ.

Lecture Outlines

1. Introduction

What is ecology? Introduction to the module and lecturers. What does ecology mean for me?
The diversity of life on earth.

PART A: The ecology of single species

2. Organisms and their environments

Conditions, resources, the niche concept.

3. The evolutionary context

Integrating ecology and evolution, natural selection, genotype, phenotype, environment, phenotypic plasticity, local adaptation, the species concept.

4. Life histories

Ecological strategies, life history evolution, traits and functional ecology, resource allocation, evolutionary stable strategies.

5. Single species populations

Single species: exponential growth, competition or the environment? Population cycles, Chaos.

PART B: Interactions between species

6. Interspecific competition and predation

Trophic interactions: Interspecific competition, predation and predator-prey interactions, indirect interactions (apparent competition).

7. Parasitism and disease

Importance of parasites, life history strategies and co-evolution, host defence, host manipulation. Parasite population ecology

8. Living together

Mutualism, commensalism, engineers; pollination; ant mutualisms; gut inhabitants; mitochondria and chloroplasts; bodyguards; mycorrhizae; lichens; agriculture.

PART C: Biodiversity and the ecology of communities

9. Biodiversity

Species richness, genetic richness and biodiversity, species area relationships and island biogeography, richness and ecosystem functioning, human impacts. Why species and genetic diversity is important.

10. Ecological succession

Disturbance, colonisation, succession, community dynamics, community assembly, diversity and productivity.

11. Community ecology

Introduction to food webs, flow of energy through ecosystems. Metapopulations. Community modules. Trophic cascades.

12. Ecological and evolutionary genetics

Evolutionary ecology from the individual to the ecosystem.

Learning outcomes

By the end of the module, students should be able to:

- Understand key ecological principles, including environmental niches, natural selection and

phenotypic plasticity

- Understand how species interact, including competition, predation, symbiosis and parasitism
- Understand biodiversity and the ecology of communities
- Understand evolutionary genetics

Indicative reading list

[Reading lists can be found in Talis](#)

Subject specific skills

This module will enable students to:

1. understand key ecological principles.
2. appreciate the complexity of ecosystems and the integration of ecological processes within these systems.
3. recognise the role of environmental influences on different levels of organisations within ecosystems.

Transferable skills

Self directed learning

Team Learning

Adult learning

Study

Study time

Type	Required
Lectures	15 sessions of 1 hour (8%)
Fieldwork	5 sessions of 5 hours (13%)
Private study	79 hours (41%)
Assessment	75 hours (39%)
Total	194 hours

Private study description

Self-directed learning and revision

Costs

Category	Description	Funded by	Cost to student
Field trips, placements and study abroad	Field trip transport and accommodation	Department	£0.00
Field trips, placements and study abroad	Appropriate outdoor footwear and outerwear.	Student	

Assessment

You do not need to pass all assessment components to pass the module.

Students can register for this module without taking any assessment.

Assessment group D2

	Weighting	Study time	Eligible for self-certification
Environmental Field Report	70%	30 hours	Yes (extension)
Students attend a week long field trip at the start of term 3- assessments will be taken during the week.			
Closed-book end-of-year examination	30%	1 hour	No
In-person locally-timetabled closed-book end-of-year examination			

Assessment group R2

	Weighting	Study time	Eligible for self-certification
Closed-book examination	100%		No
In-person locally-timetabled closed-book examination			

Feedback on assessment

Continuous feedback over the course of the field trip. Written feedback on the assessment through Tabula,.

Mark provided and cohort level feedback given for the exam.

[Past exam papers for LF265](#)

Availability

Courses

This module is Core for:

- Year 2 of UBSA-3 Undergraduate Biological Sciences
- Year 2 of ULFA-C1A1 Undergraduate Biological Sciences (MBio)
- Year 2 of ULFA-C113 Undergraduate Biological Sciences (with Placement Year)
- Year 2 of ULFA-C1A5 Undergraduate Biological Sciences with Industrial Placement (MBio)
- UIPA-C1L8 Undergraduate Life Sciences and Global Sustainable Development
 - Year 2 of C1L8 Life Sciences and Global Sustainable Development
 - Year 2 of C1LB Life Sciences and Global Sustainable Development: Ecology

This module is Core optional for:

- Year 2 of UIPA-C1L8 Undergraduate Life Sciences and Global Sustainable Development