

LF265-15 Ecological Principles and Processes

22/23

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 (DC)
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 (DC)
Conditions, resources, the niche concept.
3. The evolutionary context (CA)
Integrating ecology and evolution, natural selection, genotype, phenotype, environment, phenotypic plasticity, local adaptation, the species concept.
4. Life histories (DC)
Ecological strategies, life history evolution, traits and functional ecology, resource allocation, evolutionary stable strategies.
5. Single species populations (DC)
Single species: exponential growth, competition or the environment? Population cycles, Chaos.
PART B: Interactions between species
6. Interspecific competition and predation (DC)
Trophic interactions: Interspecific competition, predation and predator-prey interactions, indirect interactions (apparent competition).
7. Parasitism and disease (DC)
Importance of parasites, life history strategies and co-evolution, host defence, host manipulation. Parasite population ecology
8. Living together (DC)
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 (CA)
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 (CA)
Disturbance, colonisation, succession, community dynamics, community assembly, diversity and productivity.
11. Community ecology (DC)
Introduction to food webs, flow of energy through ecosystems. Metapopulations. Community modules. Trophic cascades.
12. Ecological and evolutionary genetics (CA)

Evolutionary ecology from the individual to the ecosystem.

Learning outcomes

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

- Level 5 understanding of key ecological principles, including environmental niches, natural selection and phenotypic plasticity
- Level 5 understanding of how species interact, including competition, predation, symbiosis and parasitism
- Level 5 understanding of biodiversity and the ecology of communities
- level 5 understanding of evolutionary genetics

Indicative reading list

Krebs, C. J. (2009) Ecology: the experimental analysis of distribution and A* abundance, 6th Edition. Pearson Benjamin Cummings, San Francisco.

Townsend, C. R., Begon, M. and Harper, J. L. (2008) Essentials of ecology, 3rd Edition. Blackwell Publ., Oxford.

Mayhew, P. J. (2006) Discovering evolutionary ecology; bringing together ecology and evolution. Oxford University Press.

Spellerberg, I. (2005) Monitoring ecological change, 2nd Edition. Cambridge University Press.

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 (10%)
Fieldwork	5 sessions of 5 hours (17%)
Private study	110 hours (73%)
Total	150 hours

Private study description

Self directed learning and revision

Costs

No further costs have been identified for this module.

Assessment

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

Assessment group D

	Weighting	Study time
Environmental Field Trip	30%	30 hours
Students attend a week long field trip at the start of term 3- assessments will be sat during the week		
Online Examination	70%	45 hours
45 min SAQ paper and 45 min Essay paper		

- Online examination: No Answerbook required

Assessment group R

	Weighting	Study time
In-person Examination - Resit	100%	
45 min SAQ paper / 45 min essay paper		

- Answerbook Green (8 page)

Feedback on assessment

1-2-1 feedback from the student's personal tutor

[Past exam papers for LF265](#)

Availability

Courses

This module is Core for:

- UBSA-3 Undergraduate Biological Sciences
 - Year 2 of C100 Biological Sciences
 - Year 2 of C100 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