

MODULE SPECIFICATION FORM

Module Title: Population Biology and Genetics	Level: 5	Credit Value: 20
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Module code: LND511	Cost Centre: GAHT	JACS2 code: C170
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Trimester(s) in which to be offered: 1	With effect from: September 2013
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Office use only: To be completed by AQSU:	Date approved: August 2013
	Date revised: -
	Version no: 1

Existing/New: New	Title of module being replaced (if any):
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Originating Academic Department: Biology and Environment	Module Leader: Dr D.Skydmore
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Module duration (total hours) : 200	Status: core/option/elective Core (identify programme where appropriate):
Scheduled learning & teaching hours 50	
Independent study hours 150	

Programme(s) in which to be offered: BSc Wildlife and Plant Biology	Pre-requisites per programme (between levels): Nil
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<p>Module aims to:</p> <p>1) relate the importance of population biology within evolution and the survival of organisms. 2) develop a critical understanding of the genetic and mathematical principles of population biology.</p>
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Expected Learning Outcomes:

At the end of this module, students will be able to:

Knowledge and Understanding:

- 1) Interpret the concepts of population biology and in particular genetics
- 2) Evaluate the factors involved in genetic changes of populations
- 3) Describe, critically and quantitatively, the dynamics of populations

Transferable/Key Skills and other attributes:

Through the module the student will demonstrate:

- Oral, written and visual communication and presentations skills
- Interpersonal skills of effective listening, negotiating, persuasion and presentation
- Information gathering , evaluation and application
- Quantitative and numerical skills

Assessment:

An essay will be written on a topic in population dynamics and the factors affecting population structures. This essay will require the interpretation and demonstrations of the use of mathematical concepts and their associated formulae.

A time constrained assessment will test knowledge of analytical methods in population genetics

Assessment number	Learning Outcomes to be met	Type of assessment	Weighting	Duration (eg, if exam or presentation)	Word count (or equivalent if appropriate)
1	1,2	Essay	50%		1500
2	3	Time constrained assessment	50%	1.5hour time constraint	

Learning and Teaching Strategies:

Lectures will form the principal means of delivery of theoretical elements of the module and for delivery of key concepts in the course. Discussions will be used as appropriate to involve students in the appraisal of ideas and the application of theory.

Formative support provided in tutorials provides guidance and feedback on assignment tasks and activities.

Private directed study will consolidate learning and undertake research for assessments. The focus of study is on wider reading to develop and reinforce knowledge and understanding of the topics and material covered in lectures and preparation for tutorials. This will also help students to develop time management skills, library skills and critical thinking.

Throughout the module delivery the tutor will draw to the student's attention various web sites from the industry and other information available via the VLE, as are a number of additional sources of support and information.

Syllabus outline:

What is population biology?

Population growth and regulation – size, density, fitness

Competition

Predator-prey interactions

Host- parasite interactions

Dynamics of age-structured and stage-structured populations

Hardy-Weinberg Principle

Heterozygosity and heterosis

Genetic drift

Gene flow and mutation

Principles of natural selection

Quantitative variation and epigenetics

Bibliography:

Essential reading:

Frankham, R., Ballou, J.D. and Briscoe, D.A. (2010), *Introduction to Conservation Genetics*. Cambridge University Press: Cambridge 642pp

Hastings, A. (2010), *Population Biology: Concepts and Models*. 2nd Edition. Springer: New York 320pp

Other indicative reading:

Allendorf, F.W., Luikart, G.H. and Aitken, S.N. (2012), *Conservation and the Genetics of Populations*. Wiley Blackwell: Oxford 624 pp

Journals in the library:

Conservation Biology

Ecological Modelling

Journal of Heredity

Journal of Plant Ecology

Journal of Theoretical Biology

Theoretical Population Biology