



Universidad  
de Huelva

SERVICIO DE  
LENGUAS MODERNAS

## ANEXO II. FICHA de la asignatura

**TITLE BEHAVIOURAL ECOLOGY Tutor: Dr. JOSÉ PRENDA**

**ECTS: 6 Semester 2nd**

### Description

This module covers the broad area of behavioural ecology: how an animal's behaviour is adapted to its physical and social environment. The unit comprises three broad sections: (1) introduction on evolution, ecology and behaviour, including individual "decision making" between alternative courses of action; (2) sexual reproduction and (3) social behaviour.

The module integrates these themes within an evolutionary framework that explores individual plasticity and the genetic basis of behaviour. Lectures are complemented by a practical component to develop skills in review and critique of the primary literature and the development of research skills. Throughout the module, it will be emphasized the theoretical background, but giving preference to develop the theory with examples rather than with abstract arguments.

The central themes remain: a reductionist approach to consider the costs and benefits of decision making and how trade-offs are resolved by selection; a "gene's eye" view of behaviour; and a game theoretic approach to analyse the resolution of conflicts of interest.

During a literature review exercise, students are guided through tutorials to locate and read original journal articles, make use of standard reference texts, and understand basic ideas and models in behavioural ecology. In this exercise, students communicate their findings through formal scientific reports and short PowerPoint presentations.

### Aims

The aim of this module is to understand how behaviour evolves. This requires links between studies of behaviour, evolution and ecology. The link with evolution is central because we expect natural selection to favour those behaviour patterns which maximise an individual's chances of surviving and passing copies of its genes on to future generations. The link with ecology comes in because ecology sets the stage on which individuals play their behaviour, so the best way to behave depends on ecological selection pressures, such as the distribution in space and time of food, enemies and places to live. The social environment will be important too, because individuals will often have to compete for scarce resources. So we need to consider how behaviour evolves when there are social interactions, with the potential for both conflict and cooperation.



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### Learning outcomes

1. To understand evolutionary causes and consequences of animal behaviour in an ecological context.
2. To become familiar with current theory and method in behavioural ecology
3. To evaluate, critique, synthesise and understand the primary literature in behavioural ecology.
4. To communicate clearly and concisely, demonstrating comprehension of the subject.
5. To develop writing skills.

### Syllabus indicative content

#### A. INTRODUCTION: ECONOMIC DECISIONS AND THE INDIVIDUAL

1. Natural selection, ecology and behaviour.
2. The evolution of cognition, trade-offs, social learning, optimality models and animal personality.

#### B. SEXUAL REPRODUCTION

3. Sexual selection, sperm competition and sexual conflict
4. Parental care and family conflicts
5. Mating systems
6. Sex allocation

#### C. SOCIAL BEHAVIOUR

7. Living in groups
8. Altruism, conflict and spite
9. Cooperation
10. Communication and signals

### Assessment

- Class participation (tutorials): 15%. Marks are based on participation in the tutorials using the following criteria:
  - 0 - not attending (except for valid reasons, e.g. illness)
  - 1 - attending, but not participating in the discussion



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2 - participating at a basic level (i.e. saying anything relevant to the discussion)

3 - full participation in discussion

- Essay 1 (topic/bibliography): 10%
- Essay 2 (topic/bibliography): 10%
- Essay 3 (review paper): 15%
- Extended essay (book review): 25%
- Oral presentation: 25%

### Reading list

#### Required Book:

Krebs, J.R., N.B. Davies & S.A. West. 2012. An Introduction to Behavioural Ecology. Willey-Blackwell, 4th Ed.

#### Other Readings:

Alcock, J. 2005. Animal behavior: An evolutionary approach. 8th Edition. Sinauer.

Dawkins, R. 1990. The Selfish Gene. Oxford University Press: Oxford.

Diamond, J. 1998. Why Is Sex Fun? The Evolution of Human Sexuality. Basic Books.

Soler, M. 2012. Adaptive Behaviour: Understanding the Human Animal. (First published in 2009 in Spanish by Editorial Síntesis. Original title: Adaptación del comportamiento: comprendiendo al animal humano).