



## Biodiversity and Plant Evolution

Organized by: Centre for Ecology, Evolution and Environmental Changes (<http://ce3c.fc.ul.pt>) and Museu Nacional de História Natural e da Ciência –MUHNAC (<http://www.museus.ulisboa.pt>).

**Teachers:** Helena Cotrim and Manuela Sim-Sim (coordinators), Adelaide Clemente, Ana Isabel Correia, Cecília Sérgio, César Garcia, Joana Brehm and Maria Amélia Martins Loução (researchers at Museu Nacional de História Natural e Ciência and/or cE3c).

**Calendar:** 25-30 January 2016

**Duration:** 36 hours (TP) of lectures and practical sessions

**Schedule:** 6 hours per day: from 10h-18h, everyday

### Objectives

On completion of the course, the students shall have acquired the following knowledge and understanding:

- Describe the main evolutionary acquisitions on groups of the plant kingdom and its adaptive significance.
- Comprehend the modern plant phylogeny and its sources of information.
- Explain the underlying evolutionary mechanisms of diversity and speciation in the plant kingdom.
- Describe the variety of pollination syndromes, reproductive systems and population structures present in the plant kingdom, and explain the mechanisms underlying this diversity.
- Explain and critically analyse how the genetic diversity and evolutionary potential of plant populations are influenced by phenomena like phenotypic plasticity, seed banks, hybridization, polyploidy and postglacial colonization history.
- Formulate hypotheses and propose methods when studying evolutionary phenomena in wild plant species.

This course can have a recognition of 6 ECTs for FCUL PhD students enrolling in it as part of their first doctoral year. For FCUL PhD students only requiring 5 ECTs recognized in their specific PhD programmes the last 6 hours of the course are not mandatory and the certificate will be on 'Topics in Biodiversity and Plant Evolution'.

### General Plan

1. Evolutionary acquisitions in land plants (Embryophytes).3 h
2. Phylogeny of land plants. Contemporary sources of information for land plants systematic.4 h
3. Evolutionary processes and plant population structures. Phenotypic plasticity and adaptation. Ecotypes and clines.1.5 h
4. Postglacial colonization history of plants in Europe and Atlantic islands. Genetic and biogeographic consequences. Phylogeography.3 h

5. Pollination and reproductive biology. Plant mating systems. Reproductive costs and strategies in the plant kingdom. Selective processes associated with fertilization and seed development. Evolutionary pressures shaping seed traits 3 h
6. Allopatric and sympatric speciation in the plant kingdom. Speciation through hybridization and chromosomal changes. Species concepts. 2 h
7. Plant life histories: reproductive strategies and seed ecology: Biogeographical and evolutionary aspects of seed dormancy 2 h
8. Biodiversity and Conservation Biology of plants:
  - The Convention on Biological Diversity and the Global Strategy for Plant Conservation 3 h
  - Role of Natural History Museums in plant Biodiversity Conservation 2.5 h
  - Plant ex-situ conservation 2.5 h
  - Biodiversity and plant Conservation Biology 1.5 h
9. Theme presentation 2h

**Location:** Museu Nacional de História Natural e Ciência, MUHNAC. Rua da Escola Politécnica 56/58. 1250-102 Lisboa.

**Nº (min, max) students:** 6-16

**Minimum background:** bachelor degree in Biology or related areas

**Directed to:** PhD or MSc students in Biology, Evolution, Ecology or related areas, and postdocs and other professionals working in related topics.

**Fee:** free for PhD students in the Doctoral programs BIODIV (UL; UP) and BEGC (UL, UA) and in general 1st year PhD students in the Doctoral programme in Biology (FCUL); 20 € for PhD students from institutions of the PEERS network (cE3c, CFE); 80 € for FCUL Master students and unemployed; 130 € for BTI, BI and other PhD students; 180 € for Professional and postdocs.

**Deadline for applications:** 4 January 2016

Candidates should send a short CV and a motivation letter to Helena Cotrim at the following email address: [hmcotrim@fc.ul.pt](mailto:hmcotrim@fc.ul.pt)



