

Study Plan

School:	School of Sciences and Technology
Degree:	Master
Course:	Conservation Biology (cód. 640)

1st Year - 1st Semester

Component code	Name	Scientific Area Field				TS	Durat	ion	Hours
	Assessment of Conservation Priorities	Biological Scien	-	6		Semes	ter	156	
BIO10181M			ces						
	Biodiversity and Conservation	Biodiversity and Conservation			6		Semes	ter	156
BIO10182M			ces						
	Conservation of Mediterranean Vegetation	Biological Scien-			6 Sem		Semes	ter	156
BIO10183M			ces						
	Project and Seminar I		Biological Scien-		3	Semester		ter	78
BIO10184M			ces						
Options 1									
Component code	e Name	Sci	entific Area Field	EC	CTS	Dura	ation	Ho	urs
	Biology of Macro Fungi	Bio	logical Scien-	3		Sem	ester	78	
BIO07368M		ces							
	Advanced Studies in Biodiversity and Nature Con-	Bio	logical Scien-	3		Sem	ester	78	
BIO10696M	servation	ces							
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Options 2

Component code	Name	Scientific Area Field	ECTS	Duration	Hours
	Spatial Analysis	Landscape and	6	Semester	156
PAO12331M		Planning Sciences			
	Landscape Ecology	Landscape and	6	Semester	156
PAO10613M		Planning Sciences			

*	*** TRANSLATE ME:Optativa 3 (recuperação referente ao 2º semestre) ***							
	Component code	Name	Scientific Area Field	ECTS	Duration	Hours		
		* Training in Mobility Context	Biological Scien-	9	Semester	234		
	BIO12339M		ces					

1st Year - 2nd Semester

Component code	Name	Scientific Area Field	ECTS	Duration	Hours
	Management and Conservation of Terrestrial Faunal Cum-	Biological Scien-	6	Semester	156
BIO10185M	munities	ces			
	Methodologies for Decision Support	Landscape and	3	Semester	78
PAO12329M		Planning Sciences			
	Project and Seminar II	Biological Scien-	3	Semester	78
BIO10186M		ces			



1st Year - 2nd Seme	ster							
Component code	Name	So	cientific Area F	ield	ECTS	Durat	tion	Hours
Options 3								
Component code	Name	Scienti	fic Area Field	EC1	ГS D	uration	Ηου	irs
	Training in Mobility Context	Biologi	cal Scien-	9	Se	emester	234	
BIO12339M		ces						
	Biogeography and Ecology of Bird Communities	Biologi	cal Scien-	3	Se	emester	78	
BIO12332M		ces						
	Biology and Conservation of Mammals	Biologi	cal Scien-	6	Se	emester	156	
BIO12333M		ces						
	Herptofauna & Conservation	Biologi	cal Scien-	6	Se	emester	156	
BIO12334M		ces						
	Conservation of Terrestrial Macroinvertebrates	Biologi	cal Scien-	3	Se	emester	78	
BIO12335M		ces						
	Structure and Functioning of Plant Communities	Biologi	cal Scien-	3	Se	emester	78	
BIO12336M		ces						
	Sampling Techniques of Fauna	Biologi	cal Scien-	3	Se	emester	78	
BIO12337M		ces						
	Vegetation Sampling Techniques	Biologi	cal Scien-	3	Se	emester	78	
BIO12338M		ces						

2nd Year - 3rd Semester

Component code	Name	Scientific Area Field	ECTS	Duration	Hours
Dissertation					

2nd Year - 4th Semester

Component code	Name	Scientific Area Field	ECTS	Duration	Hours
Dissertation					

Conditions for obtaining the Degree:

*** TRANSLATE ME: Para aprovação na componente curricular deste Mestrado, é necessário a aprovação (através de avaliação ou creditação) das seguintes unidades curriculares:

1.º Semestre
4 UC Obrigatórias num total de 21 ECTS
1 UC Optativa do Grupo 1
1 UC Optativa do Grupo 2
2.º Semestre
3 UC Obrigatórias 12 ECTS{\}newline
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UC Optativas do Grupo 3 num total de 18 ECTS
Para obtenção do grau, é necessário também a aprovação em Dissertação com o total de 60 ECTS, no 3.º e 4.º Semestre. ***

Program Contents

Back Assessment of Conservation Priorities (BIO10181M)



Biodiversity and Conservation (BIO10182M)

- 1. Human Population Growth and Environmental degradation
- 2. Main Guidelines in Conservation Biology
- 3. Biodiversity: losses and threatens
- 4. Population Viability Analysis
- 5. Conservation Legislation
- 6. Protected and classified areas
- 7. Global changes
- 8. Ecology, sociology, politics and economy
- The role of people in conservation
- Quantifying economic value of Biodiversity
- 9. Sustainable development
- 10. Landscape and conservation
- 11. Agriculture and conservation

Back

Conservation of Mediterranean Vegetation (BIO10183M)

Back Project and Seminar I (BIO10184M)

Back

Biology of Macro Fungi (BIO07368M)

Back

Advanced Studies in Biodiversity and Nature Conservation (BIO10696M)

This postgraduate course has an exceptional feature, whether by is very specialized contents or because there is no fixed planning lectures on Biodiversity and Nature Conservation. Each advanced course depends on the favourable conditions each year (scientific meetings, scientific cooperation agreements, large projects research, free courses, visitors or invited researchers, etc.).

Back

Spatial Analysis (PAO12331M)

1.Geographic representation: evaluation of the different representation metaphors and an introduction to a systemic appro ach to representation metaphors.

- 2. Spatial data models: detailed analysis of vectorial model, raster model and other data models.
- 3. Single layer spatial operations: neighbourhood analysis, buffering, masks and filtering.
- 4. Multiple layer spatial operations: overlay analysis and geoprocessing operations.
- 5. Dimensionality of geographic data: 3-dimensional models and an introduction to time modelling.
- 6. Conceptual design of data models and geographic modelling: geographic modelling concepts and

flowcharts design including map algebra operations.

7. Network analysis: shortest path analysis, service area, cost distance functions

8. Future perspectives: new spatial data models, new models for spatial relations and new spatial analysis processes.



Landscape Ecology (PAO10613M)

The roots of a new science, between Ecology and Geography. Integration of disciplines for progresses in a problem solving, applied scientific approach. The concept of landscape and its evolution within Landscape Ecology (LE) and associated disciplines. The novelty of spatial landscape analysis. Progresses in LE since the middle of the 20th century. The role of the International Association for LE.Particularities of the European approach and the enlargement of the LE community. The emergence of the European Association for LE and its background. The fundaments of the LE analysis. The classical literature and authors. Developments. The spatial approach and the local landscape as the specific context of work. Integration of natural and human sciences, and integration of quantitative and qualitative methods. Examples. Research and analysis, planning and design, decision support, the integration of the human and social perspectives. Novel developments in research and design.

Back

Training in Mobility Context (BIO12339M)

The traineeship programme should be prepared in accordance with the training and/or vocational components for the student as well as the characteristics / activities of the host institution.

Back

Management and Conservation of Terrestrial Faunal Cummunities (BIO10185M)

Introduction to wildlife management.

The scope of Conservation Biology.

Ecological processes

Communities and ecosystems: interactions and disturbances.

Ecosystem approach to conservation.

Conservation action plans: models; typologies; examples; eradication; control; maintenance; recovery.

Conservation plans - species practical examples

Fauna in urban areas.

Agricultural practices and maintenance of wildlife.

Invasive species and control of exotic wildlife

Fauna recovery in captivity and animal recovery.

Habitat rewilding through the domestic fauna.

Back

Methodologies for Decision Support (PAO12329M)

a. Decision Methods: importance to Nature Conservation and Environment. Relation with Landscape Planning and Management and Sustainable Development; Sustainable Development as an objective of Landscape Planning and Management

b. Portuguese policies. Environmental Law, Soil, Landscape Planning and Urban Law; Protected areas network.

c. Methodologies for Decision Support. Participation, Interactivity and Simplicity. Cognitive aspects of Decision processes. Multimethodology concept and practical application. Structuring: actors and actions. Evaluation. Recommendations.

Back Project and Seminar II (BIO10186M)



Biogeography and Ecology of Bird Communities (BIO12332M)

Introduction: the paradigms of Biology (Darwin & Wallace); the natural history of the Earth (plate tectonics and climate change); Birds as a reference model; scales of perception and levels of biological organization. Evolution and diversity of Birds: distinction of species; phylogenies; geographical variations; speciation and current numbers.

Distribution patterns: continental species (biogeographic regions); island species (the insular syndrome); pelagic species; movements (dispersal and migration).

Historical biogeography: vicariance and dispersal; perispecific taxa (population structure of species); cycles of expansion and shrinkage of glaciers (differentiation, speciation and extinction); history of the avifaunas in the Mediterranean Region.

Ecological biogeography: niche theory; communities, assemblages, guilds and populations; composition and community structure; gradients diversity; relation richness-surface; inter-specific interactions. Synthesis assay.

Back

Biology and Conservation of Mammals (BIO12333M)

1. Biology of Mammals Special features and Classification Diversity. Characteristics of the main orders and adaptations to special conditions General characteristics and particular aspects of the biology of the species occurring in Portugal Zoogeography and constraints of the current distribution 2. Mammals as a resource Domestication and domestic mammals Hunting and wild game Eco-tourism and nature tourism 3. Conservation Extinctions Rarities and endangered species Main threats Competition with Man Analysis of particular cases with emphasis on examples in Portugal 4. Management of Mammals Inventory and evaluation of the mammal component of Environmental Impact Studies and Territory Management Plans Management plans for particular species of mammals Zoonoses and the concept of one health



Herptofauna & Conservation (BIO12334M)

Batrachology Biology and ecology of amphibians
Module 1 - (Caudata) tailed amphibians (salamanders and newts) and Gymophiona (caecilians)
Module 2 - Anuran amphibians (frogs and toads)
Module 3 - Conservation of Iberian amphibians
Applied ecology to linear infrastructures (roadways and irrigation canals)
Conservation plans (examples) of Iberian amphibians.
Creation of artificial ponds for amphibians.
Reptilogy Biology and ecology of reptiles
Module 4 - Turtles
Module 5 - Saurians (lizards) and amphisbaenians (worm lizards)
Module 6 - Snakes
Module 7 - Crocodiles and tuataras
Module 8 - Conservation of Iberain reptiles:
Conservation of sea turtles.
Habitat manipulation for the conservation of the herpetofauna.

Back

Conservation of Terrestrial Macroinvertebrates (BIO12335M)

The evolutionary success of terrestrial macroinvertebrates and its overall biodiversity, past and present conservation of terrestrial macroinvertebrates; the emergence of conservation biology of macroinverbrates; levels of analysis: scale, fragmentation and destruction of habitats, species and their conservation, biological pest control and conservation, the ethical value of macroinvertebrates; action plans: habitats and their evaluation.

Back

Structure and Functioning of Plant Communities (BIO12336M)

Agroforestry ecosystems and environment: energy flows, water and nutrients.

Vegetation structure, productivity and dynamics of forest biomass: carbon acquisition and respiration.

Responses to environmental stresses of Mediterranean vegetation.

Responses to external disturbances: fire, pruning, drought, herbivory, pests and diseases

Regeneration of Mediterranean vegetation.

Methods and equipment in ecophysiology (forests).

Back

Sampling Techniques of Fauna (BIO12337M)

Sampling techniques:

- Drag-netting of aquatic macroinvertebrates.
- Techniques for catching Ropalocera butterflies.
- Trapping ground beetles.
- Electric fishing and marking freshwater fishes.
- Bioacoustics for detection of frogs and toads and intensive prospection of amphibians.
- Transects and routing barriers for reptiles.
- Absolute and relative methods for censusing birds.
- Bird ringing.
- Trapping, scent stations and attendance rates in mammals.



Vegetation Sampling Techniques (BIO12338M)

1. Vegetation (herbaceous, shrub and tree) attributes - specific composition and abundance: frequency,

- coverage, density
- 2. Vegetable diversity
- 2.1 Indices of species diversity
- 2.2 Functional diversity
- 3. Actual vegetation
- $3.1\ {\rm Methods}$ of floristic surveying for herbaceous, shrub and trees
- 3.2 Analysis of plant communities (inventorying, mapping, classification and ordination; cartography)
- 4. Structural diversity of vegetation horizontal and vertical structure
- 4.1. Physiognomy and architecture
- 4.2 Phenology, growth and productivity
- 5. Phytosociological surveying
- 6. Woody species surveying
- 7. Potential vegetation seed harvesting and soil seed bank analysis