

Course Unit	Rehabilitation and Environmental Impact	Field of study	Environment Protection
Bachelor in	Environmental Engineering	School	School of Agriculture
Academic Year	2022/2023	Year of study	3
Type	Semestral	Semester	2
Level	1-3	ECTS credits	6.0
Code	9099-309-3202-00-22		
Workload (hours)	162	Contact hours	T 30 TP - PL 30 TC - S - E - OT 20 O -

T - Lectures; TP - Lectures and problem-solving; PL - Problem-solving, project or laboratory; TC - Fieldwork; S - Seminar; E - Placement; OT - Tutorial; O - Other

Name(s) of lecturer(s) Marina Maria Pedrosa Meca Ferreira Castro

### Learning outcomes and competences

At the end of the course unit the learner is expected to be able to:

1. Know: The terminology and the basic principles of ecology vegetation. Key aspects of the strategy of occupying the environment. Disturbance regimes
2. To understand: The functioning of plant communities, the dynamic essence of nature and the processes of adjustment, reorganization and transformation.
3. Relating: Diversity environments with vegetation types. Environmental constraints and vegetation strategies
4. Analyse: The structure and functioning of plant communities.
5. Performing: Quantitative measurements of vegetation (cover, frequency, biomass, etc. ).
6. Planning: Plans for management and monitoring of plant communities

### Prerequisites

Before the course unit the learner is expected to be able to:  
Not required

### Course contents

1. Environmental constraints and vegetation responses. 2. Disturbance regimes. 3. Adaptive strategies of vegetation to disturbance and stress factors. 4. Global change and terrestrial vegetation. 5. Measurements for terrestrial vegetation. 6. Fire ecology. 7. Prescribed burning on ecosystem management. 8. Restoration and management.

### Course contents (extended version)

1. Introduction
  - Science of vegetation and scales of observation Nature and Concept of Ecological Community
  - The functioning of ecosystems: basic principals
2. Environmental constraints and vegetation responses
  - The plants in the soil-atmosphere interface. The basic resources.
  - Water stress: Implications and outlook for management. Ecological strategies
  - Light as ecological factor. The radiation in natural systems: tolerance and response
  - Forest management and nutrient cycling
3. The fundamental processes in vegetation dynamics
  - Demographics. Recruitment and regeneration.
4. Disturbance regimes and their effects
  - Regimes and types of disturbance
  - Fire as ecological factor. Effects of fires on the structure of plant communities.
  - Disturbance and vegetation regeneration. Adaptive responses.
  - The management of the forests and disturbance theory. Grazing and Cutting.
5. The terrestrial vegetation and global change
  - Historical perspective
  - Factors players global change
  - Effects of climate change on terrestrial ecosystems. The case of Mediterranean forest.
  - The vegetation and soils as kidnappers of carbon
6. Ecological restoration
  - Conservation, restoration and sustainable management of the Mediterranean forest.
  - Global change, management and conservation of Mediterranean ecosystems
7. Measurements for terrestrial vegetation
  - Description of the vegetation. Objectives and methods. Cover, density and biomass. .
  - Quantitative studies: Interpretation of results from multivariate analysis.

### Recommended reading

1. Bonham, C. D. . (1989). Measurements for Terrestrial Vegetation. John Wiley & Sons, Inc. , USA. 338 p.
2. Brower, J. E. ; Zar, J. H. ; Ende, C. N. von; (1990). Field and Laboratory Methods for General Ecology. (3ª ed. ), WCB Publishers, USA. 237 p.
3. Terradas, J. (2001). Ecología de la vegetación. Ediciones OMEGA, Barcelona. 703p.
4. Trabaud, L. (1994). Diversité de la banque de semences du sol d'une forêt méditerranéenne de Quercus ilex. Biol Conserv 69 : 107-1014.
5. Trabaud, L. , Galtie, J. F. (1996). Effects of fire frequency on plant-communities and landscape pattern in the Massif des Aspres (Southern France). Landscape Ecol

### Teaching and learning methods

Conventional lectures; use of power point presentations and internet resources. Laboratory classe. Field Classes. Course materials available in the e-learning plataform. For the foreigner students there is a specific training programme and evaluation, in relation with their nationality, based on work plans individuals.

### Assessment methods

1. Alternative 1 - (Regular, Student Worker) (Final, Supplementary)
  - Practical Work - 50%
  - Final Written Exam - 50%
2. Alternative 2 - (Regular) (Special)
  - Final Written Exam - 100%

**Language of instruction**

Portuguese

**Electronic validation**

Marina Maria Pedrosa Meca Ferreira Castro	João Carlos Martins de Azevedo	Artur Jorge de Jesus Gonçalves	Maria Sameiro Ferreira Patrício
12-12-2022	19-12-2022	20-12-2022	21-12-2022