

Course Unit	Integrated Planning		Field of study	Land Planning	
Bachelor in	Environmental Engineering		School	School of Agriculture	
Academic Year	2022/2023	Year of study	3	Level	1-3
Type	Semestral	Semester	2	ECTS credits	6.0
Code	9099-309-3203-00-22				
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) José Manuel Correia Santos Ferreira Castro

### Learning outcomes and competences

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

1. use land planning methods for different themes and at different spatial scales;
2. optimize the uses assigned to territory development;
3. locate activities fitting objectives of regional development and resources conservation.

### Prerequisites

Before the course unit the learner is expected to be able to:

1. Geographic Information Systems
2. Landscape Ecology

### Course contents

Land planning: concepts of planning and related; descriptive and prescriptive studies, and their models; organization of environmental studies - Strategic level, Regulation level, and Design level. Models and tools applied to the decision on integrated planning: hierarchical analytical method (AHP - ExpertChoice; linear programming (LP - Solver / Excel); geographic information systems (SIG - IDRISI, QGIS, WebSIG).

### Course contents (extended version)

1. Land planning
  - Environmental Planning Concepts: prescriptive and descriptive studies, and used models;
  - Biophysical analysis: processing geographic information, steps and techniques of integration;
  - Strategic Level: definition of stakeholders, objectives (criteria and targets), and alternatives;
  - Level Adjustment: economic, social and environmental constraints; local and global sustainability;
  - Level Design: diversity, heterogeneity and information;
2. Models and tools applied to the decision in integrated planning
  - Strategic Level: Analytic Hierarchy Method (AHP - ExpertChoice)
  - Regulation Level: linear programming (LP - Solver / Excel)
  - Design Level: geographic information systems, multicriteria and multiobjective models.

### Recommended reading

1. Golley, Frank B. , Juan Bellot (Editors), Rural Planning from an Environmental Systems Perspective. – Springer Verlag
2. Lein, J. K. , Integrated environmental planning. 2003, Oxford; Malden, MA: Blackwell Science. x, 228 p.
3. Randolph, J. , Environmental land use planning and management. 2004, Washington: Island Press. xxxviii, 664 p.
4. Amler, B. , et al. "Land use planning methods, strategies and tools. " Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) GmbH (1999).
5. Wehrmann, Babette. "Land Use Planning: Concept, Tools and Applications. " Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), Eschborn (2011).

### Teaching and learning methods

Lectures, tutorials, field and labGIS-based practices.

### Assessment methods

1. Alternative 1 - (Regular) (Final)
  - Final Written Exam - 30%
  - Practical Work - 70%
2. Alternative 2 - (Student Worker) (Final)
  - Final Written Exam - 100% (It includes practical exam)
3. Alternative 3 - (Regular, Student Worker) (Supplementary, Special)
  - Final Written Exam - 100% (It includes practical exam)

### Language of instruction

1. Portuguese
2. English

### Electronic validation

José Manuel Correia Santos Ferreira Castro	Manuel Joaquim Sabença Feliciano	Artur Jorge de Jesus Gonçalves	Maria Sameiro Ferreira Patrício
19-12-2022	06-01-2023	08-01-2023	09-01-2023