

Course Unit	Environmental Management	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	9099-309-3201-00-22		
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) Artur Jorge de Jesus Gonçalves

#### Learning outcomes and competences

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

1. recognize the most relevant environmental management tools, including Environmental Management Systems (EMS), Environmental Auditing, amongst others.
2. Implementation of EMS on organizations and develop environmental audits.
3. Students should develop autonomous and team working skills, with the development of technical solutions in a real world context.

#### Prerequisites

Before the course unit the learner is expected to be able to:  
Knowledge on environmental variables characterization.

#### Course contents

1. Environmental Management Strategies 2. Environmental Management System (EMS) 3. Environmental Auditing 4. Other Environmental Management Tools: Life Cycle Analysis; Environmental Performances Evaluation and Communication. 5. Development of Environmental Audits.

#### Course contents (extended version)

1. Environmental Management Strategies in Organizations:
  - Environmental Strategies Evolution;
  - Environmental Management for competitiveness;
  - Environmental Policy.
2. Environmental Management Systems (EMS)
  - EMS Definition;
  - EMS Cycle (Deming Cycle): Plan, Do, Check and Act.
  - ISO 14001 Standard;
  - Eco-Management and Audit Scheme (EMAS);
  - EMS Certification;
  - Similarities and complementarities with the quality, health and safety systems;
3. Environmental Audits:
  - Different Types of Audits;
  - Environmental Management Audits Programs
  - Scopes, limits and criteria to the audit;
  - On-site Audit;
  - Post Audit actions;
  - Environmental Action Plans.
4. Other Environmental Management Tools:
  - Introduction to Life Cycle Assessment (LCA);
  - Ecodesign;
  - Environmental Marketing and Ecolabels.
  - Environmental Performance Indicators.
5. Development of Environmental Audits:
  - Environmental Aspects Assessment;
  - Development of an Audit Plan;
  - Development of an Environmental Audit;
  - Audit Report and Action Plan Preparation and Presentation.

#### Recommended reading

1. NP EN ISO 19011: 2019 – Linhas de orientação para auditorias a sistemas de gestão
2. Pinto, A., 2012. Sistema de Gestão Ambiental - Guia para a sua implementação. 2.ª Edição. Edições Silabo.
3. NP EN ISO 14001: 2015 - Sistemas de Gestão Ambiental.
4. Regulamento (CE) n.º 1221/2009, de 25 de novembro (EMAS III), Sistema Comunitário de Ecogestão e Auditoria
5. Freeman, H. M. (Ed.), 1998. Manual de Prevención de la Contaminación Industrial. MacGraw Hill.

#### Teaching and learning methods

The classes assume a theoretical-practical approach, with the predominance of the practical component, as the students are engaged in autonomous team work, in order to provide a context for a student-centered learning process, in which the student is stimulated to develop oriented study, to develop of technical documents and perform practical activities in real context.

#### Assessment methods

1. Alternative 1 - (Regular, Student Worker) (Final, Supplementary, Special)
  - Practical Work - 75% (Four team home work.)
  - Final Written Exam - 25% (Final individual evaluation.)
2. Alternative 2 - (Student Worker) (Final, Supplementary, Special)
  - Final Written Exam - 50% (Exam)
  - Practical Work - 50% (written homework.)

**Language of instruction**

Portuguese, with additional English support for foreign students.

**Electronic validation**

Artur Jorge de Jesus Gonçalves	Manuel Joaquim Sabença Feliciano	Artur Jorge de Jesus Gonçalves	Maria Sameiro Ferreira Patrício
05-12-2022	08-12-2022	08-12-2022	19-12-2022