School of Agriculture
Course Unit Syllabus

Level of qualification:
Short cycle (TESP)
Study cycle:
Environmental Protection Systems

Course Unit: **223519** – **Treatment and Valorization of Solid Waste**

Year 2 **Semester 3** **ISCED Code: 712** **ECTS: 4.0**

Tipe of Course Unit: Compulsory **Delivery Mode:** Face-to-face **Language of Instruction:** Portuguese

COURSE COORDINATOR: Humberto Tomás Chaves

HOURS OF WORK

TOTAL HOURS	Contact Hours								Hours in autonomous work
	Theory	Theory and practice	Practical and laboratory work	Field work	Seminar	Internship	Tutorial guidance	Other	
100		**20**	**20**						**60**

Prerequisites (if applicable): Not applicable

LEARNING OUTCOMES (knowledge, skills and competence)

Awareness of the importance of biomass energy use.

Know and apply waste recovery techniques.

To know the different technologies of thermal valorization.

Know and control the management of hospital waste

Know and control the management of industrial waste

Know and control agricultural and domestic composting technology

CONTENTS

1- Thermal conversion technologies of Urban Waste

2- Management of Hospital Waste

3- Valorization and management of industrial waste

4- Valorization and management of plastic waste

5- Valorisation and management of agricultural waste

6- Composting of agricultural and domestic waste

DEMONSTRATION OF THE CONTENTS COHERENCE WITH THE COURSE UNIT'S LEARNING OUTCOMES

In the classes are exposed and discussed the concepts and fundamentals of waste management to understand and apply to the study of the various technologies for waste recovery. In these theoretical-practical classes, the students begin by knowing the problematic of the diverse types of solid residues. The aim is to provide the student with the knowledge that will enable him / her to identify these problems and then to learn about the technologies that can minimize them: waste technologies. As can be seen from the objectives of the Unit and its program, these technologies can be reuse, recycling, composting and energy recovery in the form of dedicated incineration. On the other hand it is important that students also have knowledge of how to make these technologies more profitable in terms of energy and economics.

TEACHING METHODOLOGIES

The program of this curricular unit is composed of theoretical-practical classes, in which the concepts and fundamentals are exposed, being privileged the expositive and interactive classes, with audiovisual equipment. The internet is also used as an educational support resource for research and examples of other cases of the technologies under study. In the final part of the class the students elaborate, with the support of the teacher, the monographic work. This should be about a recent theme or application, related to the subject under study.

DEMONSTRATION OF THE COHERENCE BETWEEN THE TEACHING METHODOLOGIES AND THE LEARNING OUTCOMES

This curricular unit aims to sensitize students to the importance of the recovery of waste in our days taking into account the scarcity of resources and the effect of greenhouse gases. In the first part will be taught a theoretical expository part with concrete examples and interactive debate with the students. Wherever possible, concrete examples of application of the subject under study are shown. The second part of the class is reserved for the elaboration of the monograph, with the support of the teacher, where the researches are done on the technologies, their foundations and the real cases.

Some of these subjects are recent, but they are important to students in a future professional perspective. Thus students have to elaborate works on a concrete case of waste recovery or a more recent technology related to the subject being studied. The bibliographical research of the works gives the student a wider and real view on the subject. The presentations and discussions will consolidate this knowledge and show if the student has a real knowledge of the subject.

It shows that there is coherence of teaching methodologies with the learning objectives of the curricular unit.

EVALUATION METHODS

In the final part of the class, the students elaborate, with the support of the teacher, research works in the form of presentation or written text. These should be on a recent topic of application or case study, related to the subject under study.

The papers are delivered in the format of presentations and text work, are presented and discussed later in class. The evaluation results from the weighting of the written work (50%) with the 2 presentations (25% each).

MAIN BIBLIOGRAPHY

Support text provided by the teacher. Available for download on the UC e-learning page

- Herbert Lund “The Mcgraw-Hill Recycling Handbook” Mcgraw-Hill, 2000, 2ª edição. ISBN 9780070391567

- Tchobanouglus, G.,Theisen, H. Vigil, S.A. “Integrated Solid Waste Management”. Mcgraw-Hill International Editions. 1993 New York. ISBN 978-0071128650.

- J. F. Santos Oliveira, Benilde Mendes Nuno Lapa, “Resíduos – Gestão, Tratamento e a sua Problemática em Portugal”, LIDEL, 2009. ISBN: 978-972-757-504-6.

Year of implementation: 2016/2017 | Date of approval by the Technical-Scientific Board: