

28917 - Ecology and management of agro-industrial byproducts

Syllabus Information

Academic year: 2024/25

Subject: 28917 - Ecology and management of agro-industrial byproducts

Faculty / School: 201 - Escuela Politécnica Superior

Degree: 583 - Degree in Rural and Agri-Food Engineering

ECTS: 6.0

Year: 2

Semester: Second semester

Subject type: Compulsory

Module:

1. General information

The main objective is to provide students with the scientific and technical knowledge that will allow them to address the resolution of environmental problems with reference to the functioning of natural systems, to be aware of Global Change and the bases provided by ecology to mitigate it, and to know and plan an adequate management of wastes and by-products generated in agriculture, livestock and agri-food industries.

This target is aligned with some of the Sustainable Development Goals, specifically with SDG 12, SDG 13 and SDG 15.

2. Learning results

In order to pass this subject, students shall demonstrate they have acquired the following results:

- Know, define and identify the components of the ecosystem, the interactions among them, biogeochemical cycles, ecosystem services and climate change.
- Interpret communities and ecosystems over time, incorporating the concept of disturbances.
- Identify, interpret and apply current regulations related to the management of agro-industrial wastes and by-products.
- Identify and classify the different types of waste generated in agroindustrial activities and determines their main characteristics.
- Analyze the different types of treatments that can be applied to agro-industrial wastes and by-products according to their characteristics.
- Be able to make decisions on the most appropriate use and management for a given type of waste or by-product and to draw up a management plan.

All of these learning results are part of Sustainable Development Goals 12: Responsible production and consumption , 13: Climate Action and 15: Life of terrestrial ecosystems.

3. Syllabus

BLOCK 1. Ecology

1. The organism and its environment.
2. Populations.
3. Interactions between species.
4. Compost as an example of an ecosystem
5. Ecological succession
6. Ecosystem services
7. Synthesis, understanding ecosystems to understand environmental problems and promote sustainable development.

BLOCK 2. Agro-industrial by-products management

1. Introduction to environmental management.
2. Agribusiness.
3. Legislation on agro-industrial wastes and by-products.
4. Agro-industrial waste management.
5. Technology and by-products of agri-food industries.

4. Academic activities

Lectures: Theoretical sessions in which the contents of the subject are explained. 30 hours

Problems and laboratory practices: Practical sessions in which cases related to the contents of will be developed. 26 hours

Field trips: Visits to facilities or environments related to the subject. 4 hours. Funding subjected to budget availability.

Student's autonomous work (86h)

Assessment (4h.).

5. Assessment system

The subject will be evaluated by means of a global assessment with the following activities to be carried out on the dates established by the center:

Test 1. Individual written test of theory (50% of the final grade). It will include multiple-choice and theoretical-practical questions (short and essay questions) and will correspond to the two blocks of the subject (25% for each block). For its realization, will not be allowed the use of any kind of documentation other than the one provided in the exam. Minimum score for to be averaged with the rest of the tests: 5 in each block.

Test 2. Individual written exam (20% of the final grade). It will include short questions on the problems and laboratory practices of both blocks of the course (10% ecology block; 10% agri-industrial by-product management block). The use of any kind of documentation will not be allowed except for the provided in the exam. Minimum grade to average with the rest of the tests: 5 in each block.

Test 3. Presentation of practical work (30% of the final grade). It will consist of the delivery, presentation and defense of the work done throughout the subject and corresponding to each block of the course (15% ecology block; 15% block management of agro-industrial by-products). Minimum grade to average with the rest of the tests: 5 in each block.

ATTENTION: There is the possibility of taking the evaluation of Tests 2 and 3, before the date of the global test of the assessment, having attended all the practical and work sessions and handing in the corresponding reports/questionnaires , as students will be informed in the presentation of the subject. In addition, it is possible to take a partial theoretical evaluation test of block 1 of the course at the end of the course which, if passed (minimumgrade of 5), will allow the student to evaluate only block 2 on the date of the global assessment.

If the final grade is ≥ 5 but any of the evaluation test grades are not, the subject will be failed and the grade on the transcript will be a "4.0 fail". If tests 2 and/or 3 are passed in the first evaluation session, but the subject is failed, if the student wishes, the grades corresponding to these activitieswill be kept for the second call of the same academic year.

The success rates for the subject in the last three years are: 2020/21: 83,33%; 2021/22: 90,00%; 2022/23: 89.74%

6. Sustainable Development Goals

12 - Responsible Production and Consumption

13 - Climate Action

15 - Life on Land