

## 28933 - Protection of fruit and vegetable crops

### Syllabus Information

**Academic year:** 2023/24

**Subject:** 28933 - Protection of fruit and vegetable crops

**Faculty / School:** 201 - Escuela Politécnica Superior

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

**ECTS:** 6.0

**Year:** 4

**Semester:** First semester

**Subject type:** Optional

**Module:**

### 1. General information

The designed subject aims to:

- Describe the characteristics and biological cycles of the main biotic agents (pests, arvense flora and pathogenic microorganisms) that are harmful to crops, as well as the damage they cause and the most appropriate control measures.
- Define the ecology of agroecosystems as a foundation for chemical, cultural and biological forms of control.
- Explain the basic concepts of epidemiology and their application to pests, diseases and weeds.

These objectives are aligned with some of the Sustainable Development Goals of the 2030 Agenda, fundamentally: SDG 2. Zero Hunger, SDG 3 Health and Wellness, SDG 12 Responsible Production and Consumption and SDG 15 Life of the Terrestrial Ecosystems. In particular, this training contributes to the goals of sustainable food production (2.4) and the sound management of chemicals to reduce their release into the environment (12.4), as well as to substantially reduce the number of deaths and illnesses caused by hazardous chemicals and the contamination of air, water and soil (3.9), and to ensure the conservation, restoration and sustainable use of terrestrial ecosystems (15.1).

### 2. Learning results

The subject provides the necessary training to know, understand and use plant production technologies, in particular those related to crop protection against pests and diseases. The learning results are:

- Know, understand and use the principles of crop production technology.
- Describe and apply basic knowledge of agricultural entomology.
- Describe and apply basic knowledge of plant pathology.
- Describe and apply basic knowledge of malherbology.
- Know how to apply basic techniques related to sampling, epidemiological analysis, and diagnosis of diseases.

### 3. Syllabus

#### THEORETICAL PROGRAM

Topic 1. Introduction. The agroecosystem.

Topic 2. Pest animals: rodents, mollusks, insects and mites.

Topic 3. Cereal and alfalfa pests.

Topic 4. Pests of woody crops.

Topic 5. Pests of horticultural and ornamental crops.

Topic 6. Crop protection against pests: chemical and biological control.

Topic 7. Concepts of plant pathology.

Topic 8. Plant pathogenic fungi.

Topic 9. Vegetable mycoses.

Topic 10. Control of plant mycoses. Fungicides.

Topic 11. Diseases caused by prokaryotes.

Topic 12. Diseases caused by nematodes.

Topic 13. Plant pathogenic viruses and viroids.

Topic 14. Weeds and parasitic plants.

Topic 15. Integrated management of weeds.

### **PRACTICE PROGRAM**

Practice 1. Crop protection regulatory framework.

Practice 2. Identification of pest insects (I).

Practice 3. Identification of pest insects (II).

Practice 4. Identification of pest insects (III).

Practice 5. Pest sampling and treatment threshold.

Practice 6. Registration of phytosanitary products. Vademecum of pesticides.

Practice 7. Verification of the causative agent: Koch's postulates, pure cultures.

Practice 8. Ectophytic and endophytic fungi.

Practice 9. Molecular diagnosis of plant diseases.

Practice 10. Practical cases on plant diseases (I).

Practice 11. Practical cases on plant diseases (II).

Practice 12. Diagnosis of diseases caused by bacteria.

Practice 13. Exhibition of works.

Practice 14. Identification of weeds (I).

Practice 15. Identification of weeds (II).

## **4. Academic activities**

Participative lectures, 15 topics presented in 2-hour sessions (30 hours). After an introductory topic, the following topics have been grouped into three clearly differentiated blocks: the first one includes concepts related to pests of cultivated plants, the second one includes those related to plant pathology and the third one includes knowledge on malherbology. Topics include pest, disease and weed control strategies that can be implemented in different production conditions (conventional, integrated and organic).

Laboratory/cabinet practice, 30 classroom hours, 2-hour cabinet or laboratory sessions.

Study for the written test and preparation of the course work (oral presentation), 86 hours.

Session of oral presentations: 2 classroom hours.

Passing the written test: 2 classroom hours.

## **5. Assessment system**

There will be a final global assessment consisting of 2 activities:

Activity 1. A written test on the official date consisting of 30 multiple-choice questions with four answer options (0.1 points for each correct answer and -0.033 points for each incorrect answer) and 10 short answer open questions (0.5 points each). A grade of at least 4 points is required for this test to be considered passed.

Activity 2. An oral presentation on a proposed topic or practical case, of approximately 15 minutes duration and with the support of information and communication technologies, which may be done individually or in groups of 2 students.

This presentation will take place in a practice session or on the official exam date and will be graded up to 2 points, so that a grade of at least 1 point will be required to pass.

The final grade will be obtained by calculating the weighted average of the grades obtained in the different tests. In the case that the grade is higher than 4.5 but in any of the 2 activities does not reach the minimum (4 points in the written test or 1 point in the oral presentation) the final grade will be 4.5 points.

The success rates for the subject in the last three years are: 2019/20: 75,00%; 2020/21: 75,00%; 2021/22: 66,66%