Universidad Zaragoza

Academic Year/course: 2024/25

28943 - Plant breeding

Syllabus Information

Academic year: 2024/25
Subject: 28943 - Plant breeding
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 subject and its expected results respond to the following approaches and objectives:

To provide basic knowledge on the creation of more efficient, productive varieties, resistant to diseases, pests or adverse conditions, with aptitude for mechanized cultivation, shorter cycles, etc.

To raise awareness of the benefits, risks, and technical and administrative requirements of the creation, development and use of new varieties in a sustainable agriculture.

Initiate in the manipulation and use of genetic manipulation techniques.

To provide some knowledge on genetics and plant breeding today.

The general contents of the subject are in line with the following sustainable development objectives:

Goal 2. To end hunger, achieve food security and improved nutrition, and promote sustainable agriculture.

Goal 12. Ensuring sustainable consumption and production patterns

2. Learning results

You should be able to answer a series of questions such as:

are there different methods and systems for handling plant material?

are there and/or can varieties resistant to diseases, adverse conditions, etc., be bred?

are there and/or can more productive varieties be created?

how have these varieties arisen?

can the process and objectives of breeding new varieties be directed?

how are the selection processes of new varieties carried out by conventional methods?

what is the role of biotechnology in these processes?

how are transgenic plants obtained?

what are the advantages and disadvantages of transgenic plants?

how do you introduce a new variety to the market?

3. Syllabus

1 Introduction.

2 Mendelian genetics.

5 Molecular genetics.

4 Plant material, floral and reproductive biology.

5 Geographical distribution and origin of cultivated plants.

6 Phylogenetic resources.

7 Breeding methods for self-pollinated plants.

8 Breeding methods for cross-pollinated species.

9 Breeding methods for vegetatively propagated species.

10 In vitro culture and somaclonal variation.

11 Methods for obtaining transgenic plants.

12 Molecular markers types and utilities.

13 Variety concept and improved seed production.

Practice Program;

The practices correspond to the resolution of cases related to each of the topics.

4. Academic activities

The program offered to the student to help them achieve the expected results includes the following activities

Lectures: Theoretical-practical sessions in which the contents of the subject will be explained. 30 hours

Problems and cases: Sessions of problems and cases in which the contents of the subject will be developed 30 hours

Personal study: 84 hours

Assessment tests: 6 hours

5. Assessment system

Global assessment will consist on the following activities:

1-Four orders proposed in practical classes, each one evaluated up to 10 points. Students who achieve a grade of at least 5 points in each of these assignments may choose to eliminate from their final exam the questions corresponding to the subject passed (up to 40%). The grades obtained in these partial tests will be kept during the academic year.

2-Final written exam about theoretical and practical contents, in the first and second sittings.

The detailed definition of the evaluation system will be set out in the presentation of the subject.

The success rates for the subject in the last three years are: 2020/21: 100%; 2021/22: 100%; 2022/23: 100%

6. Sustainable Development Goals

2 - Zero Hunger
12 - Responsible Production and Consumption