

Academic Year/course: 2022/23

27125 - Plant Biotechnology

Syllabus Information

Academic Year: 2022/23

Subject: 27125 - Plant Biotechnology

Faculty / School: 100 - Facultad de Ciencias

Degree: 446 - Degree in Biotechnology

ECTS: 6.0

Year: 4

Semester: First semester

Subject Type: Compulsory

Module:

1. General information

2. Learning goals

3. Assessment (1st and 2nd call)

4. Methodology, learning tasks, syllabus and resources

4.1. Methodological overview

The methodology followed in this course is oriented towards the achievement of the learning objectives. A wide range of teaching and learning tasks are implemented, such as lectures, practice sessions, autonomous work and study.

4.2. Learning tasks

The course includes the following learning tasks:

- Lectures. (3.5.ECTS).
- Practice sessions. (1.5 ECTS). Study of practical cases and evaluation of current problems in Plant Biotechnology.
- Laboratory practices (1 ECTS). Plant tissue culture *in vitro*. During laboratory students are acquainted with the basic skills and different kinds of cultures. They use several type of explants to study organogenesis, vegetative micropropagation and somatic embryogenesis.

The teaching and evaluation activities will be carried out in face-to-face mode, unless, due to the health situation, the provisions issued by the competent authorities and by the University of Zaragoza require them to be carried out telematically

4.3. Syllabus

The course will address the following topics:

- 1. Introduction to Plant Biotechnology. Origin and history of the Plant Biotechnology. Relationship with other disciplines.
- 2. The organization of the plant genome.
- 3. Mechanisms of plant variability.
- 4. Plant totipotency. Growth and development. Differentiation.
- 5. Plant tissue culture. Organogenesis, embryogenesis.

- 6. Germoplasm conservation.
- 7. Techniques and vectors for plant transformation.
- 8. Problems related to genetic manipulation in plants. Regulation of genetically modified crops.
- 9. Genetic manipulation of herbicide tolerance. Genetic manipulation of pest resistance. Strategies for abiotic stress tolerance.
- 10. Improvement of crop yield and quality.
- 11. Molecular farming.
- 12. Plant Biotechnology challenges.

4.4. Course planning and calendar

Schedules of lectures and problems will coincide with the officially established and will be available at: <https://ciencias.unizar.es/grado-en-biotecnologia>.

The places, calendar and groups for training and practical sessions will be established in coordination with the rest of subjects at the beginning of course. The Coordinator will produce the groups of students for these activities at the beginning of course to avoid overlaps with other subjects.

For students enrolled in the subject, places, times and dates of lectures and practical sessions will be public via Bulletin Board advertisements of the grade on the platform Moodle at the University of Zaragoza, <https://moodle2.unizar.es/add/> and in the moodle page of the course. These routes will be also used to communicate enrolled students their distribution by groups of practical sessions, which will be organized by the coordination degree. Provisional dates will be available on the website of the Faculty of Sciences in the corresponding section of the Degree in Biotechnology: <https://ciencias.unizar.es/grado-en-biotecnologia>.

In this web there will be also available the dates of exams.

4.5. Bibliography and recommended resources

<http://psfunizar10.unizar.es/br13/egAsignaturas.php?codigo=27125>