Universidad Zaragoza

Academic Year/course: 2022/23

28934 - Ornamental crops

Syllabus Information

Academic Year: 2022/23
Subject: 28934 - Ornamental crops
Faculty / School: 201 - Escuela Politécnica Superior
Degree: 583 - Degree in Rural and Agri-Food Engineering
ECTS: 6.0
Year:
Semester: Second semester
Subject Type: Optional
Module:

1. General information

1.1. Aims of the course

The course and its expected results respond to the following approaches and objectives:

The overall objective of the course is for students to understand the relationship between the physiology of the main genera used in cut flower and ornamental plant production and the different production systems. The student should be able to apply the basic scientific principles to the design of the most suitable production system for each type of species in order to obtain the maximum benefit by applying the most appropriate technologies to the environment, in addition to handling post-production techniques.

These objectives are aligned with some of the Sustainable Development Goals (SDGs) of the 2030 Agenda and certain targets, specifically, goal 15: Life of terrestrial ecosystems; target 15.8. By 2020, take measures to prevent the introduction of invasive alien species and significantly reduce their impacts on terrestrial and aquatic ecosystems and control or eradicate priority species. They also align with goal 12: Responsible production and consumption, target 12.8a ensure that people everywhere have the information and knowledge relevant to sustainable development and lifestyles in harmony with nature. Assist developing countries to strengthen their scientific and technological capacity to move towards more sustainable consumption and production patterns.

1.2. Context and importance of this course in the degree

The teaching of this subject is intended to provide scientific explanations to the production of ornamental crops and cut flowers, associating their development conditions to their use and natural habitat.

The theoretical and practical knowledge in Ornamental Crops can be very useful for other subjects, especially in projects related to landscape design and architecture.

1.3. Recommendations to take this course

In order to adequately follow this subject it is very convenient that the student has reached the learning results foreseen in the subjects of "Botany", "Phytotechnology", "Biotechnology" and "Biotechnology". Biotechnology". It is advisable to take "Horticultural Production" in parallel. They should also be able to read basic English.

2. Learning goals

3. Assessment (1st and 2nd call)

3.1. Assessment tasks (description of tasks, marking system and assessment criteria)

The subject Ornamental Crops will be evaluated by means of a global test of 5 sections. They will be examined according to the EPS exam calendar but students will be able to release some sections (2, 3, 4 and 5) during the academic year. Students who do not do it or want to raise grade will have to go to the final test and take the part of the exam corresponding to the section not released previously.

Evaluation Criteria

The sections included in the evaluation of the course are as follows:

1. Written test at the end of the term, according to the syllabus of the course and according to the EPS exam calendar.
2. Completion of the sequential activities proposed in the moodle platform.
3. Written presentation of the laboratory practice notebook.
4. Presentation of the reports of the technical visits
5. Presentation of the course work.

In the two calls proposed by the Center, the same evaluation methodology will be followed.

The evaluation system will include the acquisition of knowledge, skills and attitudes of the subject. The tutored work will be evaluated, as well as the presentation of the proposed sequential activities (activities proposed through the moodle 2 platform).

In the evaluation of the practical program will be taken into account not only the ability to apply theoretical content but also the application of the attitudes considered in the specific competences section when solving the proposed cases.

A minimum score of 4 points out of 10 in section 1 will be required.

1 Written test at the end of the term (50%), according to the syllabus of the subject and according to the EPS exam calendar. The test will consist of:

multiple-choice questions, each test will consist of several multiple-choice questions so that each of those answered correctly will be assigned 1 point, each of the wrong answers will be subtracted 0.2 points and each of those not answered will be graded with 0 points. The maximum score in this section will be 4.0 points out of 10.

The maximum score in this section will be 4.0 points out of 10. Each of the completely correct answers will be assigned 1 point, while the completely wrong answers will not result in any subtraction in the score of this section. The maximum score in this section will be 6.0 points out of 10.

The written test may be substituted by the elaboration of a conceptual map in which all the contents of the subject are interrelated. Clarity and the use of relevantly motivated connectors will be valued. It is an individual work. It will be the students who, at the beginning of the course, will have to choose between the option of a written test or a concept map. The basic premise is that the enrolled students must agree on the chosen option. If there is no consensus, the written test will be taken.

2 Assessment of the sequential activities proposed in the moodle 2 platform (20%). These activities must be presented on the dates proposed in the moodle 2 platform.

Students who have not completed the proposed activities, or who have not delivered them on the agreed date, may pass this part of the subject by taking a written exam.

3 Written presentation of the laboratory practice notebook (10%). The notebook will be presented individually and will have to collect the activities with their corresponding results, carried out in each one of the programmed practical sessions. Both the contents and its formal aspect will be valued. The date of delivery of the report will be fixed at the beginning of the course.

Students who, having passed this section, want to raise their grade and all those students who do not submit the report on the agreed date, must submit a report on the same day that appears in the EPS exam calendar on the practical activities carried out. Students who have not attended the practical sessions may pass this part of the subject by taking a written practical exam.

4 Presentation of the reports of the technical visits (10%).

The reports will be presented individually on the date established before the outing; they must include all the practical, technical and methodological aspects discussed in the development of each of the visits. The critical opinion of the students on the relevance of the field trip in their training will also be valued. The report cannot be presented if the field trip has not been carried out. Students who have not attended the technical visits may pass this part of the subject by taking a written exam.

5 Oral presentation of the work of the subject (10%). This work will be done individually, framed in the academically directed activities, which will be evaluated taking into account the learning process followed and the results obtained. Each student must attend a minimum of one tutorial to monitor the process. The quality of the presentation of the written work and the clarity, order and ability to answer the questions raised during the presentation to the teacher and the rest of the group will be assessed. The dates of presentation will be published well in advance.

Students who, having passed this section, wish to raise their grade and all those students who do not present the work on the agreed date, must take an individual written test on the same day as indicated in the EPS exam calendar on the contents of the coursework. This test can be done with documentation provided by the student. The accuracy of the answer and the order in the writing will be valued.

If the minimum requirements are not met in the evaluation activities of the course, it will not be considered approved even if the final grade averaged CF is equal to or higher than 5:

If final averaged grade, CF > 4, Fail, 4.

If final grade averaged, CF < 4, Fail, CF.

If in the first call of the same academic year a part of the subject has been passed and another part has been failed, in the second call the grades of the passed parts will be maintained. However, these grades will not be maintained in the following academic years.

The overall passing of the subject shows that the student has achieved minimum theoretical and practical knowledge to promote sustainable development in the field of ornamental crops, ensuring that people have the relevant information and knowledge for sustainable development and lifestyles in harmony with nature (SDG 12, target 12.8a) and taking measures to prevent the introduction of alien species (SDG 15, target 15.8).

Success rates in previous years

2018/2019	2019/2020	2020/2021
100 %	100 %	100 %

4. Methodology, learning tasks, syllabus and resources

4.1. Methodological overview

This course develops knowledge of ornamental crop production. Special emphasis will be placed on (1) nursery in-ground and protected cultivation techniques including and irrigations, fertilization and light management, and (2) cut flower production, biotechnological methods and cultural practices associated.

4.2. Learning tasks

The course includes the following learning tasks:

- Theoretical dissertation,
- Practical sessions,
- Written coursework, and
- Formal examinations related to ornamental crop production.

4.3. Syllabus

The course will address the following topics:
Section I. Economic importance of ornamental species.
Production of ornamental flowers and plants in Europe. Production of ornamental flowers and plants in Spain. Production centers. Surfaces. Value and characteristics of production. Marketing systems and formats. Market evolution. Foreign trade. (2 hours.)

Section II. Materials and facilities.

Substrata for ornamental plant cultivation. Containers. Premises. Irrigation and fertigation systems. Climatic control. Special facilities. (6 hours.)

Section III. Cultural practices: propagation and cultivation methods.
Propagation: seeds, cuttings, bulbs, layering. Planting out, transplants. Pinching and pruning. Application of hormones and similar products. Application of biotechnology to the production of ornamental plants. Plagues and diseases. Dispatch. (8 hours).

Section IV- Cultivation of ornamental species for cut flower production.
Floriculture. Woody plants; rose cultivation. Herbaceous plants; carnation cultivation. Bulbous plants; gladioli cultivation. Other cut flower species of interest at a national level. (6 hours).

Section V- Cultivation of ornamental species for live plant production.
Growing in plant pots; interior and exterior plants. Ornamental trees and shrubs. Growing bulbs. Regulations and quality standards for ornamental production. (8 hours).

Practical Programme

1- Practical laboratory experience. (20 hours).

Practical experience in laboratory/greenhouse; propagation. Recognition of substrata, containers, and materials relating to ornamental cultivation. Recognition of cut flower species. Recognition of ornamental trees. Recognition of ornamental shrubs. Recognition of ornamental bulbs. Recognition of grasses, creepers and ground cover.

2- Visits to commercial ornamental plant nurseries. (16 hours).

Field trips are considered to be a cross-curricular educational activity. Their specific programming will take place over the duration of the course and will be published on the Moodle platform of each specific subject. Where possible, the technical visits will be coordinated with other course subjects with the objective of optimizing resources.

4.4. Course planning and calendar

Tipo actividad / Semana	1	2 (1)	3 (2)	4 (3)	5	6	7	8	9	10	11	12	13	14	15	16	
Actividad Presencial																	
Teoría	2	2	2	2	2	2	2	2	2		2	2	2	2	2		
Problemas																	
Prácticas laboratorio		2						2	2		2	2					
Trabajos en grupo				5									5				
Salidas de prácticas					4	4	4	4			2	2					
Tutorías ECTS																	
Evaluación														3	3		
Actividad No presencial																	
Trabajo individual	4	4	4	6	6	4	2	6	6		6	2	2	6	4		
Trabajo en grupo												4	4	4	2		
TOTAL	6	8	6	13	12	10	8	14	10	0	12	12	13	15	11	0	

(1) On Friday, February 10, Monday schedule will be followed.
(2) Friday, February 17 will follow Monday schedule
(3) Friday, February 24 will follow Monday schedule

4.5. Bibliography and recommended resources

BB Guía de árboles y plantas de jardín : las plantas idóneas para jardín / asesores Tony Rodd y Geoff Bryant. Barcelona : Omega, cop. 2009

BB Lemaire, Francis. Cultivos en macetas y contenedores: principios agronómicos y aplicaciones. 2a.ed. Madrid:

Mundi-Prensa, 2005. [Comentario del profesor: libro electrónico]
BB Material vegetal en paisajismo mediterráneo. Vol. 1 : Máster en Jardinería y Paisaje : Valencia, noviembre 2011 / editores Juan José Galán Vivas, Vicente Caballer Mellado. Valencia : Universitat Politècnica de València, 2012
BB Ruano Martínez, J. Rafael. Viveros forestales : manual de cultivo y proyectos / J. Rafael Ruano Martínez . 2ª ed. corr. Barcelona [etc.] : Mundi-Prensa, 2008
BB Sánchez de Lorenzo Cáceres, José Manuel. Guía de las plantas ornamentales / José Manuel Sánchez de Lorenzo Cáceres . Madrid [etc.] : Ediciones Mundi-Prensa, 2001
BB Urrestarazu Gavilán, Miguel. Manual práctico del cultivo sin suelo e hidroponía / [Miguel Urrestarazu Gavilán] . Madrid : Mundi-Prensa, D.L. 2015
BC Fertirrigación : cultivos hortícolas, frutales y ornamentales / obra colectiva dirigida y coordinada por Carlos Cadahía . 3ª ed. rev., act. y ampl. Madrid [etc.] : Mundi-Prensa, 2005
BC Flora ornamental española : plantas cultivadas en la España peninsular e insular. Vol. 1, Magnoliaceae a Casuarinaceae / coordinador, José Manuel Sánchez de Lorenzo Cáceres . Sevilla : Junta de Andalucía, Consejería de Agricultura y Pesca ; Madrid : Mundi-Prensa ; Madrid : Asociación Española de Parques y Jardines Públicos, 2000
BC Flora ornamental española : plantas cultivadas en la España peninsular e insular. Vol. 2, Cactaceae-Cucurbitaceae / coordinador, José Manuel Sánchez de Lorenzo Cáceres . Sevilla : Junta de Andalucía, Consejería de Agricultura y Pesca ; Madrid : Mundi-Prensa ; Madrid : Asociación Española de Parques y Jardines Públicos, 2000
BC Flora ornamental española : plantas cultivadas en la España peninsular e insular. Vol. 3, Salicaceae-Chrysobalanaceae / coordinador, José Manuel Sánchez de Lorenzo Cáceres . Sevilla : Junta de Andalucía, Consejería de Agricultura y Pesca ; Madrid : Mundi-Prensa ; Madrid : Asociación Española de Parques y Jardines Públicos, 2003
BC Flora ornamental española : plantas cultivadas en la España peninsular e insular. Vol. 4, Papilionaceae-Proteaceae / coordinador, José Manuel Sánchez de Lorenzo Cáceres . Sevilla : Junta de Andalucía, Consejería de Agricultura y Pesca ; Madrid : Mundi-Prensa ; Madrid : Asociación Española de Parques y Jardines Públicos, 2005
BC Masaguer Rodríguez, Alberto, coord. De residuo a recurso. El camino hacia la sostenibilidad. III. Recursos orgánicos. Aspectos agronómicos y medio ambientales. 2. Uso del compost como componente de sustratos para cultivo en contenedor. Madrid: Mundi-Prensa, 2015 [Comentario del profesor: libro electrónico]
BC Normas Tecnológicas de Jardinería y Paisajismo [Recurso electrónico] : NTJ / Colegio Oficial de Ingenieros Técnicos Agrícolas y Peritos Agrícolas de Cataluña . Barcelona : Colegio Oficial de Ingenieros Técnicos Agrícolas y Peritos Agrícolas de Cataluña, 2003-2007
BC NTJ 03S (1999). Sustentación artificial y protección del arbolado. Barcelona: Colegio Oficial de Ingenieros Técnicos Agrícolas de Cataluña
BC NTJ 08E (1994). Trasplante de grandes ejemplares. Barcelona: Colegio Oficial de Ingenieros Técnicos Agrícolas de Cataluña
BC NTJ 11E (1999). Cubiertas ecológicas extensivas. Barcelona: Colegio Oficial de Ingenieros Técnicos Agrícolas de Cataluña
BC NTJ 12S (2012). Obras de bioingeniería: técnicas de protección superficial. Parte 1. Barcelona: Colegio Oficial de Ingenieros Técnicos Agrícolas de Cataluña
BC NTJ 14B (2013). Mantenimiento de palmeras. Barcelona: Colegio Oficial de Ingenieros Técnicos Agrícolas de Cataluña
BC Stoecklein, Marc C.. The complete plant selection guide for landscape design / Marc C. Stoecklein . 2nd. ed. West Lafayette (Indiana) : Purdue University Press, cop. 2011

LISTADO DE URLs:

Guía visual de plantas de Jardín, Terraza e Interior
[https://www.guiaverde.com/guia-de-plantas/]

The updated recommended bibliography can be consulted in:
http://psfunizar10.unizar.es/br13/egAsignaturas.php?codigo=28934