

Academic Year/course: 2021/22

28946 - Fruit production II

Syllabus Information

Academic Year: 2021/22

Subject: 28946 - Fruit production II

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

1.1. Aims of the course

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

The subject has as a global objective that the students know and understand the principles of the bases of the Arboriculture, so that they can use them in the development of their professional activity. Linked to these bases, they must also relate them to understand the production systems at the level of exploitation, applying the most appropriate technologies of the production process.

These approaches and objectives are aligned with some of the Sustainable Development Goals, SDGs, of the 2030 Agenda (<https://www.un.org/sustainabledevelopment/>) contributing to some extent to their achievement:

Goal 2: Zero hunger

Target 2.3: By 2030, double the agricultural productivity and income of small-scale food producers, in particular women, indigenous peoples, family farmers, pastoralists and fishermen, including through secure and equitable access to land, other production resources and inputs, knowledge, financial services, markets and opportunities for the generation of added value and non-agricultural jobs.

Goal 4: Ensure inclusive, equitable and quality education and promote lifelong learning opportunities for all

Target 4.7 By 2030, ensure that all students acquire the knowledge and skills necessary to promote sustainable development, including through education for sustainable development and sustainable lifestyles, human rights, gender equality, the promotion of a culture of peace and non-violence, global citizenship and the appreciation of cultural diversity and the contribution of culture to sustainable development.

Goal 12: Sustainable consumption and products

Target 12.2: By 2030, achieve sustainable management and efficient use of natural resources.

Target 12.4: By 2020, achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed international frameworks, and significantly reduce their release into air, water and soil in order to minimize their adverse effects on human health and the environment

- Goal 13: Take urgent action to combat climate change and its effects

Target 13.3: Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning.

1.2. Context and importance of this course in the degree

The subject is offered in the first quarter of the fourth year, once the students have already studied the biological bases of plants, have acquired skills on the soil and have learned to classify botanical species. These previous competences, together with those acquired in other subjects, provide a good basis for the development and complement of plant production, which is one of the basic pillars of the degree.

1.3. Recommendations to take this course

To properly follow this subject it is very convenient that the student has achieved the learning results provided in the subjects of: Biology, Geology, Edaphology and Climatology, Botany and Phytotechnics. They should also be able to read basic English

2. Learning goals

2.1. Competences

Generic (cross-sectional)

- CG.4. That students can transmit information, ideas, problems and solutions to both a specialized and non-specialized audience
- CG.5. That students have developed those learning skills necessary to undertake further studies with a high degree of autonomy
- CG.7. That students have the ability to use information and communication technologies applied to their field of work.
- CG.8. That students have the ability to work as a team. Specific
- CE.23 Capacity to know, understand and use the principles of plant production technologies: agro-energy production and exploitation systems.

Specific:

-Know, understand and use the principles of fruit and vegetable production technology: bases and technology of fruit propagation and production; quality control of fruit products and marketing.

- Place the importance of species in the fruit context.
- Develop information on the status of plantations of different species.
- Distinguish varieties and patterns of each species.

-Diagnose on the techniques applied to the management of the plantations.

-Understanding of the techniques applied to the fruit farm according to the species.

-Understanding the effect on the tree of the techniques applied.

-Knowledge and determination of techniques of fruit quality and vegetative multiplication conditioned by the cultivated species.

- Analysis of the situation of various species in the field of integrated and ecological production

2.2. Learning goals

Fruit production II should provide the student with sufficient knowledge about useful agronomic techniques and enable them to interpret the effects of various production techniques in real and concrete situations, with sensitivity to environmental issues. These results are linked to SDGs 4.7, 12.2, 12.4, 13.3.

Likewise, the student must know the bases of Fruit Production, develop the capacity for analysis to identify, quantify and propose solutions to solve problems of the management of fruit trees, of the different cultivation techniques, as well as demonstrate the ability to apply knowledge in practice. Establishing solutions applied to the different fruit species. . These results are linked to SDGs 2.3, 4.7, 12.2, 12.4.

The student will show their ability to perform individual tasks, teamwork and practice reports; making appropriate use of ICT (word processor, spreadsheet, bibliographic searches on the Internet ...) in the different teaching activities proposed. This result is linked to SDG 4.7

Intertwined in these learning outcomes are the objectives and targets of the SDGs, especially those mentioned in point 1.1, which are the most involved in this subject.

2.3. Importance of learning goals

The competences acquired in this subject are relevant because they allow to understand the agronomic aspects of the productive process and to develop the student's capacity to manage the influence of the ecological environment for the development and specific fruit production, as well as the planning of the cultural practices necessary to obtain the quality appropriate to the production objectives set.

3. Assessment (1st and 2nd call)

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

Evaluation Criteria

The evaluation system will be the same in all calls proposed by the Center and will include the acquisition of knowledge, skills and attitudes specific to the subject.

Students who attend on a regular basis and solve the questions and works that will be proposed in class may pass the

subject through continuous evaluation. On the other hand, students who want to pass without assistance, will take the exam described below.

To pass the subject it will be necessary to achieve a minimum score of 4 points out of 10 in section 1. If the minimum requirements are not reached in the activities of evaluation of the asignatura will not be considered approved even if the final qualification averaged, is equal to or greater than 5. In that case the note which shall appear in the minutes shall be suspended with the qualification of the test referred to in paragraph 1.

1. Global face-to-face test written at the end of the semester (75%), according to the syllcle of the subject and according to the calendar of exams of the EPS. It must be approved in the call because no note is kept of any section for the next call. The test shall consist of:
 1. Test-type questions, which will consist of several multiple choice questions so that each correct answer will be assigned 0.4 points, each of the wrong answers will mean the subtraction of 0.15 points and each of the unanswered ones will be qualified with 0 points. The maximum score in this section will be 3.2 points out of 10.
 2. Short questions to be developed in which the accuracy of the answer and the order in the drafting will be assessed. Each of the completely correct answers will be assigned 0.8 points, while the completely wrong answers will not mean any subtraction in the score of this section. The maximum score in this section will be 5.6 points out of 10.
 3. Examination "de visu" of aspects related to the subject. This consists of recognizing the morphology of species studied and the cultivation techniques applied. The maximum score in this section will be 1.2 points out of 10.
2. This exam can be validated by additional work done during the course and /or memories of the visits. In order to make this change there must be agreement between teacher and students at the beginning of the course.
3. Elaboration of the memory, exhibition and public defense of the practical works on the effects of a cultivation technique in the fruit crop.

The reports will be made individually. This report must be prepared following the guidelines and the format of presentation that will be marked in the practical program of the asignatura at the beginning of course. The work will be exposed and defended by each student, in a practical session, in which they must explain and argue some of the points contained in the report, debate them and discuss them with the rest of the participants (teacher and students). The time available for the presentation and defense of the topic during the seminar sessions will be 15 minutes maximum. The list of works and the date of defense will be provided at the beginning of the course along with the calendar of the rest of the teaching activities of the subject.

The works presented will go through anti-plagiarism tools before their correction, leaving as not presented the one that presents a high level of copy. Both the memory and the exposure and its defense will be evaluated according to the following criteria: clarity and order of the written memory, ability to work in a team, ability to adequately transmit information during the exhibition, and ability to debate during the defense of the chosen topic. These assessment criteria will accredit the achievement of learning outcome number 5.

The grade obtained in this evaluation will be maintained for the second call, in the case of not passing the first. The evaluation of this test will represent 25% of the final grade.

Students who, having passed this section, want to upload grade and all those students who do not submit the report on the agreed date, must take an individual written test on the same day that appears in the calendar of exams of the EPS on the contents of practices and papers presented.

In relation to the SDGs, and in particular to targets 2.3, 12.2, 12.4, and 13.3, the theoretical and practical basis is included in the various sections of the evaluation, with the activity of preparing the work of progress being the activities most committed to targets 12.2 and 12.4. While the questions derived from the laboratory practices are oriented, in addition, to the goal 2.3.

4. Methodology, learning tasks, syllabus and resources

4.1. Methodological overview

Theoretical sessions

They will consist of expository and participatory lessons. Cabinet and laboratory practices. These will be demonstrative-active-interrogative activities in which students will learn various techniques and procedures and train their ability to observe, analyze and critically.

Practices in greenhouse, field and laboratory

They are guided practical activities, the content is about applied aspects of the theoretical sessions. These activities will be carried out in the facilities of the Higher Polytechnic School, both in the greenhouse, laboratory or in the field of practice. These are participatory-active interrogative activities.

Special practices

It will consist of visits to various companies where the student can observe and analyze some of the contents and processes studied in the theoretical classes to test their ability to observe, analyze and synthesis. These are purely participatory-active interrogative activities.

Tutorials

These are sessions, at the request of the students, to solve any type of doubts both of the theoretical sessions and of the

practices. In particular, they are highly recommended to focus the preparation of practice work; in this case they will consist of at least one scheduled tutoring.

Non-Face-to-Face Activities

They consist of the reading and understanding of the theoretical knowledge material and the resolution of the exercises proposed during the theory, practices and field sessions. These activities will be carried out with full hourly freedom.

4.2. Learning tasks

The subject consists of 30 face-to-face hours of master class that will be taught on a regular basis during the 15 weeks of duration of the semester, 6 face-to-face hours dedicated to the resolution of problem and cases, 14 face-to-face hours dedicated to the realization of practices in laboratory, greenhouse or practice plot, 6 face-to-face hours of visit to fruit farms or fruit fair. The course papers are distributed in a tutored session (2 h) and the exhibition of the same (2 h).

4.3. Syllabus

The course will address the following topics:

1. Interactive master's classes (Activity type 1): 30 study hours

Module I. Fruit production

I.1. Fruit distribution and production. Ecological production. Integrated production.

Module II. The fruit species

II.1 Apple tree

II.2 Pear tree

II.3 Peach tree

II.4 Plum tree

II.5 Cherry tree

II.6 Almond tree

II.7 Apricot tree

Module III. Viticulture

III.1 Vines

Module IV. Olive growing

IV.1 Olives

Practical program

2. Problem-solving and case studies (Activity type 2) 12 hours/student

i.1 Climate study

i.2 Strategic alternatives

i.3 Sizing a farm

i.4 Selecting cultivation zones using GIS

3. Laboratory practice (Activity type 3) 8 hours/student

a.1 Description and identification of fruit trees

a.2 Pruning pip fruit plants

a.3 Pruning stone fruit trees

a.4 Sexual propagation

4. Special practicals (Activity type 4) 6 hours/student

Given the importance of direct contact with fruit growing for this course, 1 external visit is planned to farms with different production objectives.

5. Tutorial seminar, supervision and presentation of written work and practicals. (Activity type 6) 4 hours/student.

6. Teaching work (Activity type 6) 16 hours/student

Preparation and presentation of practical seminar-type work. The topics for this activity will be proposed at the start of the course.

7. Study (Activity type 7): 74 hours/student.

Overall evaluation test in accordance with the Regulation on Learning Assessment Standards of the University of Zaragoza.

Internship Program

Problem and case solving (Type 2 activity) 8 hours/student

1. 1 Selection of cultivation areas using GIS

2. 2 Strategic alternatives

Laboratory practices (Activity type 3) 8 hours/student

1. 1 Description and identification of fruit trees
2. 2 Pruning of fruit seeds and bone
3. 3 Sexual and asexual multiplication
4. 4 Follow-up maturation and harvest

Special practices (Activity type 4) 12 hours/student

Given the importance of direct contact with fruit growing for the learning of this subject, several external visits are scheduled in which farms with different production objectives will be known.

Seminar of tutoring, supervision and presentation of works and practices. (Activity type 6) 2 hours/student.

Teaching work (Activity type 6) 16 hours/student

Elaboration and presentation of a practical work type-seminar. The topics for this activity will be proposed at the beginning of the course.

Hours of exhibition and discussion of the works carried out 1 hours/student Study (Activity type 7): 74 hours/student.

Realization of the global test of evaluation in accordance with the Regulation of Norms of Evaluation of the Learning of the University of Zaragoza

4.4. Course planning and calendar

Sessions and presentation of papers

The approximate temporal distribution is shown in the attached table, taking into account that the exits to the agricultural holdings will be conditioned on the availability of the holdings to be visited.

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

(1) On Friday, October 1, the hours of Monday will be followed

(2) On Friday, October 22, the schedule of Tuesday will be followed

(3) Thursday, November 18, will follow Monday's schedule

(4) On Monday, January 10, the schedule of Friday will be followed

(5) On Tuesday, January 11, the schedule of Friday will be followed

All the teaching material used by the teacher in the theoretical and practical classes will be available to the students in the Reprography Service of the Higher Polytechnic School and in the Moodle platform, with sufficient notice.

The teaching activities of the subject include the realization of works, with the advice and tutoring of the teacher, in which the characteristics of the written report, the clarity, order and the ability to answer the questions that arise during the oral presentation before the teacher and the rest of the group will be valued. The date of public defense of these works will be provided at the beginning of the course along with the calendar of the rest of the teaching activities.

The written test, for those who have not submitted the works, will be carried out on the dates set by the center for each call.

4.5. Bibliography and recommended resources

- BB** Baldini, Enrico. *Arboricultura general* / Enrico Baldini ; versión española de José de la Iglesia González. Madrid : Mundi-Prensa, 1992
- BB** *El cultivo del olivo* / editores científicos, Diego Barranco, Ricardo Fernández-Escobar, Luis Rallo. 5ª ed., rev. y ampl. [Sevilla] : Junta de Andalucía, Consejería de Agricultura y Pesca ; Madrid [etc.] : Mundi-Prensa, 2004
- BB** Felipe, Antonio J. *El cultivo del almendro : el almendro II* / Antonio J. Felipe, Xavier Rius, María J. Rubio-Cabetas. [Zaragoza] : [los autores], D.L. 2017
- BB** Gil Salaya, Gonzalo F. *Fruticultura : el potencial productivo : crecimiento vegetativo y diseño de huertos y viñedos* / Gonzalo F. Gil Salaya. 2ª ed. Santiago : Alfaomega : Ediciones Universidad Católica de Chile, cop. 1999
- BB** Gil Salaya, Gonzalo F. *Fruticultura : la producción de fruta : fruta de climas templado y subtropical y uva de vino* / Gonzalo F. Gil Salaya. Santiago, Chile : Ediciones Universidad Católica de Chile, 2000
- BB** Hidalgo Fernández-Cano, Luis. *Tratado de viticultura general* / Luis Hidalgo. 3ª ed. rev. y amp. Madrid [etc.] : Mundi-Prensa, 2002
- BC** Bretaudeau, Jean. *Poda e injerto de frutales* / Jean Bretaudeau ; versión española de Vicente Sotes Ruiz y Manuel Vázquez-Prada Grande, Elisa Boix Aristu. 1ª ed., 4ª reimp. Madrid : Mundi-Prensa, 1991
- BC** Cambra Ruiz de Velasco, Mariano. *Diseños de plantación y formación de árboles frutales* / M. Cambra, R. Cambra Ruiz de Velasco. [9a. ed.]. Madrid : Consejo Superior de Investigaciones Científicas, 2004
- BC** Coutanceau, M. *Fruticultura : Técnica y economía de los cultivos de rosáceas leñosas productoras de fruta* / M. Coutanceau. 3ª ed. Traducción, adaptación y prólogo de la 1ª edición española [por] Juan Simarro, ampliación y puesta al día de la 2ª y 3ª edición española [por] Antonio J. Felipe Mansergas. Barcelona : Oikos-Tau, 1977 (reimp. 1997)
- BC** *Frutticoltura ad alta densità : impianti, forme d'allevamento e tecniche di potatura* / a cura di S. Sansavini, A. Errani. 1ª ed. Bologna : Edagricole, 1998
- BC** Gautier, Michel. *La culture fruitière. Vol. 1, L'arbre fruitier* / Michel Gautier. 2e. éd. rev. et augm. París : Tec & Doc-Lavoisier, 1993
- BC** Gautier, Michel. *La culture fruitière. Vol. 2, Les productions fruitières* / Michel Gautier. [1ere. éd.]. París : Tec & Doc-Lavoisier : J.B. Baillièrre, cop. 1988
- BC** Gil-Albert Velarde, Fernando. *Tratado de arboricultura frutal. Vol. I, Morfología y fisiología del árbol frutal* / Fernando Gil-Albert Velarde. 3ª ed. rev. Madrid : Ministerio de Agricultura, Pesca y Alimentación : Mundi-Prensa, 1991
- BC** Gil-Albert Velarde, Fernando. *Tratado de arboricultura frutal. Vol. II, La ecología del árbol frutal* / Fernando Gil-Albert Velarde. 3ª ed. rev. Madrid : Ministerio de Agricultura, Pesca y Alimentación : Mundi-Prensa, 1992
- BC** Gil-Albert Velarde, Fernando. *Tratado de arboricultura frutal. Vol. III, Técnicas de plantación de especies frutales* / Fernando Gil-Albert Velarde. Madrid : Ministerio de Agricultura, Pesca y Alimentación : Mundi-Prensa, 1989

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- BC** La qualite gustative des fruits : méthodes pratiques d'analyse / auteurs, Françoise Alavoine ...[et al.]. Aix en Provence : CEMAGREF, 1988
- BC** Lalatta, Filippo. Fertilización de árboles frutales / Filippo Lalatta. Barcelona : CEAC, 1988
- BC** Martínez de Toda Fernández, Fernando. Claves de la viticultura de calidad : nuevas técnicas de estimación y control de la calidad de la uva en el viñedo / Fernando Martínez de Toda Fernández. Madrid [etc.] : Mundi-Prensa, 2008
- BC** Urbina Vallejo, Valero. Prácticas de fruticultura general / Valero Urbina Vallejo. Lleida : Paperkite, 2011
- BC** Urbina Vallejo, Valero. Propagación de los frutales / Valero Urbina Vallejo. Lleida : Paperkite, 2005

The updated recommended bibliography can be consulted in :
<http://psfunizar10.unizar.es/br13/egAsignaturas.php?codigo=28946>