Course guide
390310 - CGB - Grain and Biomass Crops

Last modified: 19/12/2023

Unit in charge: Barcelona School of Agri-Food and Biosystems Engineering
Teaching unit: 745 - DEAB - Department of Agri-Food Engineering and Biotechnology.

Degree: BACHELOR'S DEGREE IN AGRICULTURAL ENGINEERING (Syllabus 2009). (Compulsory subject).
BACHELOR'S DEGREE IN AGRONOMIC SCIENCE ENGINEERING (Syllabus 2018). (Optional subject).

Academic year: 2023 **ECTS Credits:** 6.0 **Languages:** Catalan

LECTURER

Coordinating lecturer: GIL GORCHS ALTARRIBA

Others: Lydia Serrano, Gil Gorchs

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Specific:
1. Crop production technologies: Technology and systems of field crops production. Agroenergetics.

Transversal:
CT3. (ENG) Comunicación eficaz oral y escrita. Comunicarse de forma oral y escrita con otras personas sobre los resultados del aprendizaje, de la elaboración del pensamiento y de la toma de decisiones; participar en debates sobre temas de la propia especialidad.

TEACHING METHODOLOGY

In theoretical classes concepts that students have to learn are presented together with applied examples and questions. In the practical sessions, the student works individually or in teams of 2-3 people and carries out the proposed activity to improve the ability to observe, solve problems, locate crop information and data, to present results, programs and agronomic reports, and to discuss the vision of different groups.

LEARNING OBJECTIVES OF THE SUBJECT

Once they have passed the course, students will have broad knowledge of cereals, forages and protein, energy and other industrial crops and how to produce them in the most economically, socially and environmentally advantageous ways. In particular, they must be able to recognise the main field and biomass crops, identify optimal cultivation conditions and design rotations of crops and technical itineraries that are appropriate for sustainable grain and biomass crop production.

STUDY LOAD

Type	Hours	Percentage
Self study	90,0	60.00
Hours large group	40,0	26.67
Hours small group	20,0	13.33

Total learning time: 150 h

CONTENTS

Introduction to field and biomass crops

Description:
In this content, grain and biomass crops and their cultivation systems are presented. The following aspects are worked:
Groups of field crops, monoculture and fallow
Morphology, cycle and physiology of grasses
Cultivation technology for sustainable production: soil work, rotation, cover crops, protection and other complementary technology

Related activities:
Activity 1: Theory lessons
Activity 2: Individual assessment test
Activity 5: Classroom or computer practices

Full-or-part-time: 13h
Theory classes: 5h
Self study : 8h

CEREALS

Description:
This content is dedicated to:
Production, products and quality of cereals
Cereal production technology
The winter cereals: wheat, barley and other winter cereals
Summer cereals: corn, sorghum, rice and other summer cereals

Related activities:
Activity 1: Theory lessons
Activity 2: Individual assessment test
Activity 3. Laboratory practices
Activity 4: Field practices
Activity 5: Classroom or computer practices
Activity 6: Visits to farms and transformation and research centers

Full-or-part-time: 61h
Theory classes: 15h
Laboratory classes: 9h
Self study : 37h

Protein, oil, energy and other crops

Description:
The following aspects are worked:
Grain legumes: peas and others
Oilseeds: colza and sunflower
Agroenergetic, fibrous and other crops

Related activities:
Activity 1: Theory lessons
Activity 2: Individual assessment test
Activity 3. Laboratory practices
Activity 4: Field practices
Activity 6: Visits to farms and transformation and research centers

Full-or-part-time: 45h
Theory classes: 12h
Laboratory classes: 6h
Self study : 27h

Forages

Description:
This content is dedicated to forages and grasses. The following aspects are worked
Forage production and quality
Annual and multiannual forages
Forage conservation: haymaking, dehydration and silage
Types and situation of the meadows, meadows and pastures in Spain and in Catalonia
Establishment and maintenance of meadows
Grazing techniques and adaptation to seasonal production (conservation of grass)
Multifunctionality of pasture and evolution of trashumance

Related activities:
Activity 1: Theory lessons
Activity 2: Individual assessment test
Activity 3: Laboratory practices
Activity 5: Classroom or computer practices
Activity 6: Visits to research centers and companies

Full-or-part-time: 31h
Theory classes: 8h
Laboratory classes: 5h
Self study : 18h

ACTIVITIES

(ENG) ACTIVITAT 1: CLASSES D'EXPLICACIÓ TEÒRICA

Full-or-part-time: 98h
Theory classes: 38h
Self study: 60h

(ENG) ACTIVITAT 2: PROVES INDIVIDUALS D'AVALUACIÓ

Full-or-part-time: 2h
Theory classes: 2h

(ENG) ACTIVITAT 3: PRÀCTIQUES DE LABORATORI

Full-or-part-time: 9h
Laboratory classes: 4h
Self study: 5h

(ENG) ACTIVITAT 4: PRÀCTIQUES DE CAMP (ESAB)

Full-or-part-time: 9h
Laboratory classes: 4h
Self study: 5h

(ENG) ACTIVITAT 5: PRÀCTIQUES D'AULA (INFORMÀTICA O AULA)

Full-or-part-time: 10h
Laboratory classes: 4h
Self study: 6h

(ENG) ACTIVITAT 6: VISITES A EXPLOTACIONS I CENTRES DE TRANSFORMACIÓ I D'INVESTIGACIÓ

Full-or-part-time: 22h
Laboratory classes: 8h
Self study: 14h

GRADING SYSTEM

The overall assessment of the subject will be done taking into account the following partial assessments:
N1: result of the two individual assessment tests described in Activity 2
N2: result of activities 3 to 6, evaluated from the available deliverables for each activity, in which V1 and A2 weight twice more than other deliverables.
Final grade = 0.65 * N1 + 0.35 * N2

EXAMINATION RULES.

- Not carrying out any of the proposed activities implies a mark of zero
- Tasks must be submitted within the established period.
- Attendance to practical sessions and visits is mandatory

BIBLIOGRAPHY

Basic:
- Muslera Pardo, E. de; Ratera García, C. Praderas y forrajes : producción y aprovechamiento. 2ª ed. revisada y ampliada. Madrid: Mundi-Prensa, 1991. ISBN 8471143291.
- López Bellido, Luis. Cultivos herbáceos. Madrid: Mundi-Prensa, 1991. ISBN 8471143240.
- López Bellido, Luis. Cultivos industriales. Madrid [etc.]: Mundi-Prensa, 2003. ISBN 8484760758.
- Franco, F.; Ramos, A. El cultivo de las leguminosas grano en Castilla y León. Valladolid: Junta de Castilla y León, 1996. ISBN 8478464719.
- Pujol i Palol, Miquel. Gramíneas : aplicaciones agronómicas [on line]. Barcelona: Edicions UPC, 1998 [Consultation: 15/05/2020]. Available on: http://hdl.handle.net/2117/165398. ISBN 8483012510.

Complementary:
- Pujol i Palol, Miquel; Gorchs Altarriba, Gil. Escalas fenológicas para el seguimiento del ciclo de los cereales de invierno. [Barcelona ?: s.n.], 1989. ISBN 844045807X.
- Sherstha, Anil. Cropping systems : trends and advances. Binghamton, N.Y.: Food Products Press, 2003. ISBN 1560221070.
- Pujol i Palol, Miquel. Les plantes cultivades. 2a ed. Miquel Pujol Palol, 2008. ISBN 9788460945901.
- El estado mundial de la agricultura y la alimentación [on line]. [Roma]: FAO, 1996 [Consultation: 16/07/2022]. Available on: https://www.fao.org/publications/sofa/es/.- Juan Valero, José Arturo de; Ortega Álvarez, José Fernando; Tarjuelo Martín-Benito, José María. Sistemas de cultivo. Evaluación de itinerarios técnicos. Madrid: Consejería de Agricultura y Medio Ambiente. Junta de Comunidades de Castilla la Mancha : Mundi-Prensa, 2003. ISBN 848476138X.

RESOURCES

Hyperlink:
- Asociación Española Agricultura de Conservación
- Plataforma tecnológica d'agricultura sostenible
- Cultius extensius
- No Laboreo
- Aapresid Argentina
- Sustainable Agriculture and Soil Conservation (The SoCo project)
- RuralCat
- Centro internacional del mejoramiento del maíz y trigo (CIMMYT)
- International Rice Research Insitute (IRRI)