Course guide  
390310 - CGB - Grain and Biomass Crops 

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: 2022  
ECTS Credits: 6.0  
Languages: Catalan 

LECTURER 
 
Coordinating lecturer: GIL GORCHS ALTARRIBA 
Others: Fran Garcia Ruiz, Gil Gorchs 

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES 

Specific: 

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 

<table>
<thead>
<tr>
<th>Type</th>
<th>Hours</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self study</td>
<td>90,0</td>
<td>60.00</td>
</tr>
<tr>
<td>Hours large group</td>
<td>40,0</td>
<td>26.67</td>
</tr>
<tr>
<td>Hours small group</td>
<td>20,0</td>
<td>13.33</td>
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</tbody>
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Total learning time: 150 h
## 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 A1 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:

### 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.

**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 )