Course guide
390342 - GMV - Plant Genetics and Breeding

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 AGRONOMIC SCIENCE ENGINEERING (Syllabus 2018). (Compulsory subject).
Academic year: 2022  ECTS Credits: 6.0  Languages: Catalan

LECTURER

Coordinating lecturer: Casals Missio, Joan
Others: Lozano Luis, Lidia
Simó Cruanyes, Joan

TEACHING METHODOLOGY

LEARNING OBJECTIVES OF THE SUBJECT

STUDY LOAD

<table>
<thead>
<tr>
<th>Type</th>
<th>Hours</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<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>
</tr>
<tr>
<td>Self study</td>
<td>90,0</td>
<td>60.00</td>
</tr>
</tbody>
</table>

Total learning time: 150 h

CONTENTS

Basics of plant breeding

Description:
content english

Full-or-part-time: 30h
Theory classes: 6h
Practical classes: 4h
Self study: 20h
From domestication to modern varieties: history of plant breeding

Description:

Full-or-part-time: 38h
Theory classes: 13h
Practical classes: 3h
Self study: 22h

Plant breeding methods

Description:
Plant breeding and its objectives. The concept of ideotype and how we design it. Breeding of species of vegetative reproduction. Breeding of autogamous species. Breeding of allogamous species. The commercial seed production and the different degrees of protection of the new varieties.

Full-or-part-time: 30h
Theory classes: 6h
Practical classes: 4h
Self study: 20h

DNA sequencing and application of molecular markers to breeding programs. Bioinformatics applied to plant biotechnology.

Description:
DNA sequencing techniques, genotyping through sequencing (Genotyping by sequencing (GBS)). Use of molecular markers to estimate genotypic variability from DNA sequences. Databases (NCBI) and synteny studies. Restriction enzymes, construction of linkage maps, microarrays. Techniques to generate variability: directed mutagenesis (Tillin and Ecotilling), somaclonal variation, polyploidization, transgenesis and cisgenesis, gene editing.

Full-or-part-time: 20h
Theory classes: 4h
Practical classes: 4h
Self study: 12h

Plant breeding: study cases

Description:
Description of the origin and domestication, plant breeding objectives and methods, and methods of commercial seed production for different crop species.

Full-or-part-time: 32h
Theory classes: 12h
Practical classes: 4h
Self study: 16h
**ACTIVITIES**

- **name english**
  
  **Full-or-part-time:** 37h  
  Theory classes: 37h

- **name english**
  
  **Full-or-part-time:** 16h  
  Practical classes: 16h

- **name english**
  
  **Full-or-part-time:** 3h  
  Practical classes: 3h

- **name english**
  
  **Full-or-part-time:** 4h  
  Theory classes: 4h

**GRADING SYSTEM**

**BIBLIOGRAPHY**

**Basic:**

**Complementary:**