

60568 - Plant production systems

Información del Plan Docente

Academic Year	2018/19
Subject	60568 - Plant production systems
Faculty / School	201 - Escuela Politécnica Superior
Degree	546 - Master in Agricultural Engineering
ECTS	9.0
Year	1
Semester	Second semester
Subject Type	Compulsory
Module	---

1.General information

1.1.Aims of the course

1.2.Context and importance of this course in the degree

1.3.Recommendations to take this course

2.Learning goals

2.1.Competences

2.2.Learning goals

2.3.Importance of learning goals

3.Assessment (1st and 2nd call)

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

4.Methodology, learning tasks, syllabus and resources

4.1.Methodological overview

The methodology followed in this course is oriented towards achievement of the learning objectives. A wide range of teaching and learning tasks are implemented, such as:

- Lectures in the classroom.
- Practice sessions in lab and computer room.
- Tutorials.
- Field visits.

4.2.Learning tasks

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The course includes the following learning tasks:

- Section I. Agricultural systems. Lectures and practice sessions.
- Section II. Regulated agricultural systems. Lectures and practice sessions. Field visit.
- Section III. Management of agricultural systems: applied technologies. Lectures and practice sessions. Field visit.

4.3.Syllabus

The course will address the following topics:

Lectures

Section I: Agricultural systems

1. I.1. Agricultural systems. Components
 - I.1.1 Introduction: the future of agriculture
 - I.1.2 Components
 - I.1.3 Simulation models
2. I.2 Analysis of rain-fed farming systems in arid and semiarid areas
 1. I.2.1 Arable crops
 - Rotations
 - Cereals, protein, oil, agroenergetical crops
 - I.2.2. Fruit crop systems
 - Vineyard
 - Almond crop
 - Olive crop
3. I.3 Analysis of irrigated farming systems in arid and semiarid areas
 - I.3.1 Water management: water footprint
 - I.3.2 Rotations
 - I.3.3 Rice
 - I.3.4 Fruit crops
4. I. 4 Analysis of other agricultural systems
 - I.4.1 Agrosilvipastoral systems
 - I.4.2 Tropical crops systems

Section II: Regulated agricultural systems

1. II.1 Integrated production and protection
 - II.1.1 Background and legislation
 - II.1.2 Crop protection in integrated production
2. II.2 Organic Farming
 - II.2.1 Background and legislation
 - II.2.2 Crop protection in organic farming

Section III. Management of agricultural systems: technologies applied

1. III.1. Precision agriculture
2. III.2. Conservation agriculture

Practice sessions

Section I:

- PL1 Webpages revision
- PL2 LAI
- PL3 Leaf chlorophyll content
- PG1 Alternative crops
- PG2 Soil erosion

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- PG3 Cover crops
- PG4 Water footprint in agriculture
- PG5 Balance water
- PG6 Irrigation energy
- PG7 Deficit irrigation
- PG8 Pastures

Section II: Regulated agricultural systems.

- PL5 Cover crops
- PL6 Auxiliary fauna
- PL7 Pesticides in soil
- PL8 Herbicide resistance
- PC1 Visit 1: Valle de Vio (Fragen-Broto)
- PC2 Visit 2: organic farming

Section III. Management of agricultural systems: technologies applied

- PL4 soil compaction
- PC3 Visit 3: Cereals

4.4.Course planning and calendar

Provisional course planning

Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Lectures	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Practice sessions	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Lab sessions		2	2	2	2		2		2		2		2	
Field visits										4		5		5
Assessment														3
Autonomous work	7	9	9	9	9	9	9	9	9	9	9	8	9	5

4.5. Bibliography and recommended resources

- BB** Condiciones del suelo y desarrollo de las plantas según Russell / coordinado por Alan Wild ; versión española de P. Urbano Terrón, C. Rojo Hernández . Madrid : Mundi-Prensa, 1992
- BB** Fitotecnia : bases y tecnologías de la producción agrícola / Francisco J. Villalobos...[et al.] . Madrid : Mundi-Prensa, 2002
- BB** Loomis, R.S.. Ecología de cultivos : Productividad y manejo en sistemas agrarios / R.S. Loomis, D.J. Connor . Madrid : Mundi-Prensa, 2002
- BB** Urbano Terrón, Pedro. Fitotecnia : ingeniería de la producción vegetal / Pedro Urbano Terrón . Madrid : Mundi-Prensa, 2002
- BC** Agricultura ecológica en secano : soluciones sostenibles en ambientes mediterráneos / coordinadores, Ramón Meco Murillo, Carlos Lacasta Dutoit, Marta María Moreno Valencia . Madrid : Ministerio de Medio Ambiente y Medio Rural y Marino : Mundi-Prensa, D.L. 2011
- BC** Agustí Fonfría, Manuel. Fruticultura / Manuel Agustí . Madrid : Mundi-Prensa, 2004
- BC** Badía Villas, David. Prácticas de fitotecnia: bases de la producción vegetal / David Badía, Clara Martí, Asunción Usón . Zaragoza : Prensas Universitarias de Zaragoza, 2002
- BC** Epstein, Emanuel. Mineral nutrition of plants : principles and perspectives / Emanuel Epstein, Arnold J. Bloom . 2nd ed. Sunderland, Mass. : Sinauer Associates, Inc., 2005
- BC** Fageria, N.K.. Maximizing crop yields / N.K. Fageria . New York : Marcel Dekker, 1992
- BC** Guerrero García, Andrés. El suelo, los abonos y la fertilización de los cultivos / Andrés Guerrero García . Madrid : Mundi-Prensa, 1990
- BC** Labrador Moreno, Juana. La materia orgánica en los agrosistemas : Aproximación al conocimiento de la dinámica, la gestión y la reutilización de la materia orgánica en los agrosistemas / Juana Labrador Moreno . 2ªed. corr. y amp. Madrid : Ministerio de Agricultura, Pesca y Alimentación : Mundi-Prensa, D.L. 2002

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- BC López Ritas, Julio. El diagnóstico de suelos y plantas : (métodos de campo y laboratorio) / por Julio López Ritas y Julio López Melida. 4ª ed., rev. y amp. Madrid : Mundi-Prensa, 1990
- BC Plaster, Edward J. La ciencia del suelo y su manejo / Edward J. Plaster . Madrid : Paraninfo, 2000
- BC Porta Casanellas, Jaime. Edafología para la agricultura y el medio ambiente / Jaime Porta Casanellas, Marta López-Acevedo Reguerín, Carlos Roquero de Laburu . 3ª ed., rev. y amp. Madrid [etc.] : Mundi-Prensa, 2003
- BC Saña Vilaseca, Josep. La gestión de la fertilidad de los suelos : fundamentos para la interpretación de los análisis de suelos y la recomendación de abonado / Josep Saña Vilaseca, Joan Carles Moré Ramos, Alfred Cohí Ramón . Madrid : Ministerio de Agricultura, Pesca y Alimentación, Secretaría General Técnica, D.L.1996
- BC Thompson, Louis M.. Los suelos y su fertilidad / Louis M. Thompson, Frederick R. Troeh ; [versión española por Juan Puigdefábregas Tomás] . - 4a ed., [reimpr.] Barcelona [etc.] : Reverté, D.L.1988

The updated recommended bibliography can be consulted in:

<http://psfunizar7.unizar.es/br13/egAsignaturas.php?id=9698>