

Academic Year/course: 2022/23

## 25223 - Agrosilvopastoral systems

### Syllabus Information

**Academic Year:** 2022/23

**Subject:** 25223 - Agrosilvopastoral systems

**Faculty / School:** 201 - Escuela Politécnica Superior

**Degree:** 571 - Degree in Environmental Sciences

**ECTS:** 6.0

**Year:** 3

**Semester:** First Four-month period

**Subject Type:** Compulsory

**Module:**

### 1. General information

### 2. Learning goals

### 3. Assessment (1st and 2nd call)

### 4. Methodology, learning tasks, syllabus and resources

#### 4.1. Methodological overview

The methodology followed in this course is oriented towards the achievement of the learning objectives. A wide range of teaching and learning tasks are implemented, such as lectures, problem-solving, fieldwork, assignments, autonomous work and study and exams.

#### 4.2. Learning tasks

This course is organized as follows: lectures, problem-solving,

- **Lectures** (30 hours). Theory will be explained by the teacher.
- **Problem-solving and cases** (14 hours). Set of practice sessions in which students, working in small groups of 4-5 people, will solve environmental problems and cases linked to agrosilvopastoral activity.
- **Fieldwork** (10 hours). Given the importance of direct contact with the agricultural environment for the learning of this course, two external technical visits are scheduled: one to a heavy agricultural production system in the Valle del Ebro region and another one to an agroforestry production system in the Pyrenees.
- **Assignment:** (20 hours). Creation and presentation of a seminar-type practical work. The topics for this activity will be proposed at the beginning of the course.
- **Autonomous work and study** (74 hours). Time dedicated by the student to studying the described educational activities outside of the classroom.
- **Exam.** Taking the comprehensive evaluation test in accordance with the Regulations of Learning Evaluation Standards of the University of Zaragoza.

#### 4.3. Syllabus

This course will address the following topics:

##### **Lectures**

## Section I: Fundamentals of Agriculture

- 1. Origin of Agriculture
- 2. Agriculture and Environment
- 3. Sustainable Agricultural Production
- 4. Soil and Fertility Management
- 5. Water Management
- 6. Genetic Resources
- 7. Crop Protection

## Section II: Agroforestry Systems

- 8. Agricultural Systems
- 9. Silvopastoral Systems

## Section III. Agricultural Policy

- 10. Community Agricultural Policy
- 11. Good Agricultural Practices Catalog
- 12. Agri-environmental Measures
- 13. Vulnerable Areas
- 14. Rural Development

## **Practice sessions**

1. Nitrogen Fertilization in Integrated Production.
2. Calculation of the Water Needs of Crops.
3. Selection of Plant Material in an Orchard.
4. Control of an Invasive Species in Port Pastures.
5. Estimation of Production, Biodiversity and Quality of Forage in Hay Meadows.
6. Estimation of Stock Densities via GIS.
7. Efficiency in the Use of Irrigation Water.

## **4.4. Course planning and calendar**

The course will consist of 30 theory classes (approximately one topic per two hours in class) and 10 practical activities (7 for solving problems and cases, 2 for technical visits and 1 for the educational paper) of varying lengths.

- Week 1:
  - Theory: Origin of Agriculture
  - Practice: Course Papers: selection of topics
- Week 2:
  - Theory: Agriculture and Environment
  - Practice: Technical Visit for Agroforestry Activity in a valley in the Aragon Pyrenees
- Week 3:
  - Theory: Sustainable Agricultural Production
  - Practice: Technical Visit for Irrigated Crops
- Week 4:
  - Theory: Soil and Fertility Management
  - Practice: Fertilization of Crops
- Week 5:
  - Theory: Water Management
  - Practice: Water Needs of Crops
- Week 6:
  - Theory: Genetic Resources
  - Practice: Plant Material in Orchards and Environmental Conditioners
- Week 7:
  - Theory: Crop Protection
  - Practice: Control of an Invasive Species in Port Pastures
- Week 8:
  - Theory: Agricultural Systems

- Practice: Production, Biodiversity and Quality of Food in Hay Meadows
- Week 9:
  - Theory: Forestry Systems
  - Practice: Estimation of Stock Densities via GIS
- Week 10:
  - Theory: Community Agricultural Policy
- Week 11
  - Theory: Good Agricultural Practices Catalog
  - Practice: Efficiency in Use of Irrigation Water
- Week 12
  - Theory: Agri-environmental Aid
  - Practice: First Session for Oral Presentation of the Course Papers
- Week 13
  - Theory: Vulnerable Areas
  - Practice: Second Session for Oral Presentation of the Course Papers
- Week 14:
  - Theory: Rural Development
- Week 15:
  - Theory: Review and Doubts

At the beginning of the course, the students will be given a definitive calendar of the educational activities and a list of educational papers. During the first practice session, the educational papers will be chosen or assigned. The co-authors of every paper will have two tutoring sessions (half an hour long) specifically for the seminar, where the professor will guide them and track their progress.

Further information concerning the timetable, classroom, office hours, assessment dates and other details regarding this course will be provided on the first day of class or please refer to the Faculty of Sciences website and Moodle.

#### 4.5. Bibliography and recommended resources

- BB** Agricultura sostenible / coordinadores, Rafael M. Jiménez Díaz y Jaime Lamo de Espinosa. Madrid : Mundi-Prensa : Agrofuturo : Life, 1998
- BB** Ferrer Benimeli, Carlos. El primate agricultor / Carlos Ferrer Benimeli. 1ª ed. Sevilla : Punto Rojo Libros, 2016
- BB** Gliessman, Stephen R. Agroecología : procesos ecológicos en agricultura sostenible / Stephen R. Gliessman. Turrialba : CATIE , 2002
- BB** Integración del medio ambiente en la política agraria de la UE : informe de evaluación basado en los indicadores IRENA / Agencia Europea de Medio Ambiente. Madrid : Centro de Publicaciones, Ministerio de Medio Ambiente, 2007
- BB** Loomis, R.S. Ecología de cultivos : Productividad y manejo en sistemas agrarios / R.S. Loomis, D.J. Connor. Madrid : Mundi-Prensa, 2002
- BC** Ferrer Benimeli, Carlos. Diccionario de pascología : aspectos ecológicos, botánicos, agronómicos, forestales, zootécnicos y socio-económicos de los pastos / Carlos Ferrer Benimeli. [Madrid] : Fundación Conde del Valle de Salazar, D.L. 2016
- BC** La multifuncionalidad de la agricultura en España : concepto, aspectos horizontales, cuantificación y casos prácticos / coordinadores, José A. Gómez-Limón, Jesús Barreiro Hurlé ; casos prácticos, Elena Mármol y César Marcos. Madrid : Ministerio de Agricultura, Pesca y Alimentación : Eumedia, 2007
- BC** Montserrat Recoder, Pedro. La cultura que hace el paisaje : escritos de un naturalista sobre nuestros recursos de montaña / Pedro Montserrat Recoder. Estella (Navarra) : La Fertilidad de la Tierra, 2009
- BC** Pastos del Pirineo / Federico Fillat... [et al.] (eds.). Madrid : Consejo Superior de Investigaciones Científicas; Huesca : Diputación de Huesca, 2008
- BC** Snapp, S., Pound, B. (ed) (2008). Agricultural systems: agroecology and rural innovation for development. Amsterdam: Elsevier Academic Press

The updated recommended bibliography can be consulted in: <http://psfunizar10.unizar.es/br13/egAsignaturas.php?codigo=25223>

