390347 - AGROE - Agroecology

Degree competences to which the subject contributes

Specific:
- CE-CA-21PA. (ENG) Tecnologías de la producción vegetal.
- Sistemas de producción y explotación. Protección de cultivos contra plagas y enfermedades. Tecnología de sistemas de cultivo de especies herbáceas. Agroenergética.
- CE-CA-15. (ENG) Ecología. Estudio de impacto ambiental: evaluación y corrección

Transversal:
- CT2. SUSTAINABILITY AND SOCIAL COMMITMENT: Being aware of and understanding the complexity of the economic and social phenomena typical of a welfare society, and being able to relate social welfare to globalisation and sustainability and to use technique, technology, economics and sustainability in a balanced and compatible manner.

Teaching methodology

Learning hours consist of:
- theoretical classes
- seminars with a teacher-oriented work after recommending first and then reading different bibliographic documents
- visit to a farm
- desktop work in small group

Learning objectives of the subject

To understand the principles of ecology, how they help us to understand the concept of the agroecosystem and to analyze the sustainability of farming systems using ecology as a lens
Be able to use and apply basic terms of ecology in natural and agricultural ecosystems
Analyze ecosystem functions and explore different examples of the dynamic processes occurring within ecosystems
Understand how these processes are manipulated in an agroecosystem
Evaluate the importance of resistance and resilience in the sustainability of an ecosystem, and identify resilient components of your agroecosystem
Apply your understanding of your agroecosystem to the context of the global food system
# Study load

<table>
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<tr>
<th>Study load</th>
<th>Hours large group:</th>
<th>Hours small group:</th>
<th>Self study:</th>
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<tr>
<td><strong>Total learning time:</strong> 150h</td>
<td>40h</td>
<td>20h</td>
<td>90h</td>
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<td>26.67%</td>
<td>13.33%</td>
<td>60.00%</td>
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### Content

#### ECOSYSTEMS AND AGROECOSYSTEMS. ABIOTIC AND BIOTIC COMPONENTS OF THE AGROECOSYSTEM

**Learning time:** 18h  
- Theory classes: 9h  
- Self study: 9h

**Description:**  
In this content Agroecology is presented as a scientific discipline, although it has several dimensions. It will be present a brief history of the Agroecology. The main characteristics of the agroecosystems as particular ecosystems will be explained.  
The aim is to briefly review the environmental factors in the agroecosystems (crops, livestock and mixed systems), both abiotic factors (radiation, humidity, temperature, pH,...) and biotic factors (organisms present in the soil, flora associated with the crops, fauna that interacts with the cultivated plants and the animals present on the farm).

**Related activities:**  
- Activity 1  
- Activity 2

#### PATTERNS AND PROCESSES IN AGROECOSYSTEMS

**Learning time:** 34h  
- Theory classes: 14h  
- Self study: 20h

**Description:**  
This content will address the most important concepts in ecological theory, both at the population and community levels: allocation of resources, carrying capacity, dispersion, biodiversity and ecological diversity, biotic interactions, food webs, succession, energy flows and circulation of nutrients,...

**Related activities:**  
- Activity 1  
- Activity 2  
- Activities 5 and 6
### AGROECOLOGY AND LANDSCAPE

**Description:**
This content will address the interconnection of ecosystems (farms, semi-naturals and naturals) that make up the landscape. Some important aspects of landscape ecology and its relevance to agriculture and livestock will be considered.

**Related activities:**
- Activity 1
- Activity 3
- Activity 4
- Activities 5 and 6

**Learning time:** 8h
- Theory classes: 3h
- Self study: 5h

### AGROECOLOGY AND AGROECOSYSTEM MANAGEMENT. ECOSYSTEM SERVICES ASSOCIATED WITH AGRICULTURE AND LIVESTOCK

**Description:**
This content will present some technologies that allow us to examine how ecological concepts and principles can be useful to agricultural practice (intercropping, multispecies crops, crop rotation, cover crops, floral bands, use of field margins, management of invasive plants, grasslands,...), and particularly in the manage end the impact on the diversity.

Besides, the concept of ecosystem service will be worked on. Ecosystem services or "benefits that humans derive from ecosystems" related to agricultural and / or ranching operations, their relative importance with respect to other "inputs" that farm requires, and the convenience of their sustainability (see transversal competence).

**Related activities:**
- Activity 1
- Activity 3
- Activity 4
- Activities 5 and 6

**Learning time:** 85h
- Theory classes: 10h
- Practical classes: 20h
- Self study: 55h
### Planning of activities

| ACTIVITY 1. CLASSES OF THEORETICAL EXPLANATION AND SEMINARS | Hours: 36h  
Theory classes: 36h |
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<tr>
<td>Description: Master classes will be held alternating with seminars (where an objective will be formulated, specialized bibliography will be provided in the form of scientific articles, time will be left for the search of information and an expository session will be held by the students).</td>
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<td>Support materials: Bibilographic material (books, scientific articles and links to specialized websites)</td>
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| ACTIVITIES 2 and 3. WRITTEN EVALUATION TESTS | Hours: 4h  
Theory classes: 4h |
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<td>Description: Two individual written tests will be carried out, one on contents 1, and 2; and the other on contents 3 and 4</td>
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<td>Support materials: copy of written exam</td>
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<tr>
<td>Descriptions of the assignments due and their relation to the assessment: Resolutions of the two tests. They represent each 30% (both 60%) of the final mark of the subject</td>
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<td>Specific objectives: Assess the achievement of the learning objectives of the subject acquired by the student</td>
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| ACTIVITY 4. VISIT TO A FARM | Hours: 5h  
Laboratory classes: 5h |
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<td>Description: Students will make a proposal to visit a farm (in groups of a maximum of 3 people). Once accepted the proposal by the teaching staff the students will take it.</td>
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<td>Support materials: The students will elaborate a scheme (with a questionnaire) of work that will be supervised by the teaching staff and will serve for the visit and the obtaining of the necessary data for the accomplishment of the activities 5 and 6.</td>
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| Specific objectives: At the end of the activity the student will be able to:  
Describe a chosen technology indicating the ecological bases identified  
Characterize from the agro-ecological focus (use of indicators) the visited farm to assess its resilience  
Place the farm in the landscape mosaic set in which it is located |

| ACTIVITY 5. OFFICE WORK AND ORAL EXPOSURE - 1 | Hours: 5h  
Laboratory classes: 5h |
|------------------------------------------------|------------------------------------------------------------|
Description:
From the elaboration of the data obtained in the visit to a farm, the students will elaborate a report (with delivery of a document) and make a brief oral presentation on the "know-how" of the selected agricultural / livestock technology, focusing on the aspects related to the ecological bases that support it.

Support materials:
Script for the preparation of a written report.

Descriptions of the assignments due and their relation to the assessment:
Report that weighs, together with the assessment of the oral presentation, 15% of the global evaluation of the subject.

Specific objectives:
Detect and analyze the ecological bases that sustain the technology selected by the student.

ACTIVITY 6. OFFICE WORK AND ORAL EXPOSURE - 2

Description:
From the elaboration of the data obtained in the visit to a farm, the students will elaborate a report (with presentation of a report) and they will make a brief oral presentation to present the evaluation of the resilience of the exploitation.

Support materials:
Script for the preparation of a written report.

Descriptions of the assignments due and their relation to the assessment:
Report that weighs, together with the assessment of the oral presentation, 25% of the global evaluation of the subject.

Specific objectives:
Evaluate the resilience of the operation by using indicators based on the data obtained during the visit. Propose a plan to improve the farm from the agroecological perspective.

Qualification system

The final qualification of the subject (Nfinal) will be the weighting of the different tests and evaluated works:
N1: qualification of the first evaluation test (contents 1 i 2).
N2: qualification of the second evaluation test (contents 3 i 4).
N3: qualification of the report and of the oral presentation on the "know how" of an agriculture / livestock technology evaluated once a farm has been visited (activity 5).
N4: qualification of the report and of the oral presentation on the evaluation of the resilience of a visited farm (activity 6).

Nfinal = 0.3 N1 + 0.3 N2 + 0.15 N3 + 0.25 N4
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Bibliography

Basic:


Complementary:


Others resources:

web site url
https://agroeco.org/