Course guide
390222 - EC - Case Studies

Unit in charge: Barcelona School of Agri-Food and Biosystems Engineering
Teaching unit: 745 - DEAB - Department of Agri-Food Engineering and Biotechnology.
Degree: MASTER'S DEGREE IN ENABLING TECHNOLOGIES FOR THE FOOD AND BIOPROCESSING INDUSTRY (Syllabus 2014). (Compulsory subject).
MASTER'S DEGREE IN ENABLING TECHNOLOGIES FOR THE FOOD AND BIOPROCESSING INDUSTRY (Syllabus 2020). (Compulsory subject).

Academic year: 2022 ECTS Credits: 5.0 Languages: Spanish, English

LECTURER

Coordinating lecturer: Hernandez Yañez, Eduard
Others: Alfranca Burriel, Oscar
Rodero Delamo, Lourdes
Barrodo Muxi, Cristina

PRIOR SKILLS

Graduate students in science, engineering or technology disciplines with a diploma in areas close to agricultural engineering, food engineering, chemical or biosystems engineering, equivalent to 240 ETCS.

REQUIREMENTS

Presentality. Participation in the discussion of the problems posed during the course sessions.

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Specific:
10. Innovation of new materials and processes for food and bioproducts. Designing of processes improving health, efficiency and environmental impact requirements.
12. Identification of the opportunities and knowledge of the scientific basis of photonics in measurement techniques, treatments and communication. Selection of new technologies for the food industry.
13. Identification of the opportunities and knowledge of the scientific basis of nanotechnology application in the treatment of bioproducts. Identification of the benefits and risks of nanotechnology applied to food packaging and conservation.

Generical:
1. Ability to apply the language and techniques of industrial management in the agrifood and biotechnological sector
2. Ability to define, coordinate and implant new productive processes in the agri-food and biotechnological industries.
3. Coordination and direction of complete engineering projects in the field of agri-food and bioprocesses.
4. Applying of comercialization systems and logistics to the agri-food and bioprocesses sector.
5. Identification of the industrial technologies with larger future impact and develop new applications of such technologies in the food and biotechnological industry.
6. Ability to assess and improve the design of processes and products considering social and environmental impacts.
Transversal:
7. ENTREPRENEURSHIP AND INNOVATION: Knowing about and understanding how businesses are run and the sciences that govern their activity. Having the ability to understand labor laws and how planning, industrial and marketing strategies, quality and profits relate to each other.
8. 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.
9. TEAMWORK: Being able to work in an interdisciplinary team, whether as a member or as a leader, with the aim of contributing to projects pragmatically and responsibly and making commitments in view of the resources that are available.

TEACHING METHODOLOGY
We indicate here the repertoire of teaching methods to be applied in the different training activities according to the teaching plans of the subject.
Lecture or conference: presentation of knowledge by university professors or by external specialists.
Participative classes: collective solving of exercises, conducted group discussions with the lecturer and other students in the classroom; classroom presentation of an activity individually or in small groups.
Theoretical and practical works: conducted classroom activity or exercise, individually or in small groups, with the advice of the lecturer.
Wide-scope project: learning based on the design, planning and implementation of a project of wide complexity or length, applying and expanding previous knowledge and writing a complete project memory.
Information search: Information search by students, it allows the acquisition of knowledge, skills and attitudes related to obtaining information.
Case Study: A method used to study an individual, an institution, a problem, etc. in a detailed or contextual way. It is also a simulation technique where the students must make a decision about a particular problem (one case of a conflict is presented and the students must develop strategies for conflict resolution).
Evaluation activities.

LEARNING OBJECTIVES OF THE SUBJECT
After accomplishing the objectives of this subject, the student:
- Is able to identify the problems of a specific industrial process and the steps needed to solve it.
- Knows the right tools to get the information needed to make decisions.
- Is able to propose possible alternatives or solutions to improve a process and to assess the influence of the changes proposed in all the stages of the process.
- Is comfortable with the design, presentation and management of projects dealing with the implementation of new technologies in the food and biotechnological industries.

STUDY LOAD

<table>
<thead>
<tr>
<th>Type</th>
<th>Hours</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hours large group</td>
<td>35,0</td>
<td>28.00</td>
</tr>
<tr>
<td>Self study</td>
<td>90,0</td>
<td>72.00</td>
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</tbody>
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Total learning time: 125 h
CONTENTS

Chapter 1

Description:
Analysis of Case studies in the food and biotechnological industries including the following aspects:
- Developing and defending the best solution for a case giving arguments for the decisions.
- Definition of the technological basis of the studied case.
- Analysis of the experimental design.
- Proposal of different alternatives and analysis of their viability.
- Analysis of the innovative and entrepreneurial aspects of the suggested solutions
- Analysis of how each suggested solution affects each part of the global problem.
- Assessment of the aspects related to technological surveillance, knowledge protection (patents) and the possibility of creating a company.
- Study and assess the energy efficiency of processes

Full-or-part-time: 40h
Theory classes: 40h

GRADING SYSTEM

Continuous evalutaion, participation in classes, oral presentation of the studied cases individually or in teams and the proposed solutions.
N1: case study in the food industry
N2: innovation strategies
N3: energy efficiency
N4: design of experiments
Final note = 0.45 N1 + 0.17 N2 + 0.30 N3 + 0.13 N4

EXAMINATION RULES.

Presentiality. Continuous monitoring. Deliveries and oral presentations.

BIBLIOGRAPHY

Basic:

RESOURCES

Other resources:
Use of software available in classrooms at the center: Python, Minitab, Matlab
Satellite databases (Copernicus, Sentinel), climatic (Meteocat), geographic information systems (SIGPAC), etc...