

Pilot Plant Experiences

Code: 103228
ECTS Credits: 6

Degree	Type	Year	Semester
2501925 Food Science and Technology	OB	3	A

Contact

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Use of Languages

Principal working language: catalan (cat)
Some groups entirely in English: No
Some groups entirely in Catalan: No
Some groups entirely in Spanish: No

Teachers

Marta Capellas Puig
Josep Yuste Puigvert
Manuel Castillo Zambudio
Jordi Saldo Periago

External teachers

Joan Gallardo

Prerequisites

It is recommended to be attending simultaneously or having studied the subjects: Food Processing Methods I and the Food Processing Methods II.

Objectives and Contextualisation

This subject is closely related to the subjects of Food Processing Methods I and Methods of food processing II, belonging to the same subject.

This subject will work on the practical aspects of the theoretical knowledge of the two subjects mentioned above.

The objectives of both subjects are:

- To identify the properties of the important foods for their processing.
- To understand food processing operations and identify the unit operations involved.
- To differentiate the purpose of the different processing operations.

- To identify, understand and describe the processing facilities and equipment and its operating principles.
- To compare the transformation and conservation processes and select the most appropriate in each situation.
- To compare, select, control and optimize the processing operations, regardless of the complexity of them.
- To know the effect of transformation and conservation processes on the nutritional and organoleptic quality of food.
- To apply knowledge about food processing to ensure the quality and safety of products in the most respectful way possible with the environment.

Competences

- Apply knowledge of the basic sciences to food science and technology.
- Apply the principles of biology and chemical engineering to describe, analyse, control and optimise the processes of food transformation and conservation.
- Apply the principles of processing techniques and evaluate their effects on the quality and safety of the product.
- Apply the scientific method to resolving problems.
- Communicate effectively with both professional and non-professional audiences, orally and in writing, in the first language and/or in English.
- Identify pathogenic, spoilage, and industrially-useful microorganisms, along with the conditions that are favourable or unfavourable to their growth in foods and in industrial and biotechnological processes.
- Show understanding of the mechanisms by which raw materials deteriorate and the reactions and changes that take place during storage and processing, and apply the methods for controlling this.

Learning Outcomes

1. Apply the scientific method to resolving problems.
2. Build models to predict the effect of technological treatments on food components.
3. Communicate effectively with both professional and non-professional audiences, orally and in writing, in the first language and/or in English.
4. Describe the characteristics and use of the different systems for controlling processes.
5. Recognise the importance of fermentation processes and appreciate the role of microorganisms in industrial processes.
6. Relate the characteristics of foods to their physical properties.
7. Select food conservation methods that slow down deterioration.
8. Select processes of conservation, transformation, transport and storage that are suited to foods of animal and plant origin.

Content

The content of this subject encompasses the practical contents corresponding to the subjects of Food Processing Methods I and the Food Processing Methods II.

The contents are structured in practical sessions of laboratory, practical sessions in the pilot plant, seminars and sessions of problems.

Methodology

The training activities will be carried out with sessions of practices in the pilot plant, sessions of practices in the laboratory, seminars in the classroom of computer science and problems in the classroom. In all the training activities, the students will work the scientific knowledge exposed to the theoretical classes of the subjects of Conservation and/or transformation methods I and the Methods of conservation and/or transformation II.

In the practical sessions the students will do the practical work with a group under the supervision of the teacher. Before beginning a practice session, the student must have read and prepared the practice guideline in order to know the objectives, the basics and the procedures that he must perform. Before the practice is completed, the teacher will ask the students about the script. This can be done individually (asking any of the students present to explain the basics of practice to other classmates) or by means of a small test (online or face-to-face) throughout the group. The teacher will make an introduction to the practice and explain the operation of the different devices that will be used during the practice, as well as the general safety regulations to be taken into account during its development. At the end of each practice the students will have to answer questions through an online test that will respond later from home.

In seminars students will practice computer simulation practices in the computer room individually. At the end of the practice the students will have to work independently from the simulation.

In problems sessions students will perform calculations of problems of different food processes individually or in groups, under the supervision of the teacher. At the end of the session students will have to work independently based on the knowledge acquired during the session.

The teaching material used in the subject will be available on the Moodle platform. At the beginning of course, the student will have a guideline available for all the practices that will be carried out at the pilot plant and laboratory level. Each practice will show the objectives, foundation and methodology. This platform will also be used as a mechanism for the exchange information and documents between the teaching staff and students.

In seminar sessions and problems, the teacher will give to the students the corresponding teaching material for each session.

Activities

Title	Hours	ECTS	Learning Outcomes
Type: Directed			
Practical sessions at the pilot plant	23.5	0.94	3, 4, 6, 8, 7
Practical sessions in the laboratory	23	0.92	3, 5, 6, 8, 7
Problems	19	0.76	1, 6, 8, 7
Seminars	14	0.56	3, 2, 4, 6, 8, 7
Theoretical class	1	0.04	
Type: Autonomous			
Self study	32.5	1.3	2, 4, 5, 6, 8, 7
Solving problems and seminars, preparation of work and reading	30	1.2	1, 3, 2, 4, 5, 6, 8, 7

Assessment

The assessment will be individual and will be carried out continuously in the different evaluation activities that have been programmed. The maximum score that can be obtained is 10 points and will be obtained with the sum of the qualifications of the different evaluation activities. The subject will be approved with an overall score of 5 or higher. In order to pass the subject, it is essential to obtain a minimum of 5 points (out of 10) in the two exams and have attended 80% of the practices. The attendance to the practices is compulsory.

It will be considered that a student is not evaluable if he has participated in activities and evaluation that represent $\leq 15\%$ of the final grade.

Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
Answer to teachers questions about the practice script	20 %	0.5	0.02	3, 4, 5, 6, 8, 7
Deliverables	10%	0	0	1, 3, 2, 4, 6, 8, 7
First exam	20 %	2	0.08	1, 6, 8
Practice test	30 %	2.5	0.1	4, 5, 6, 8, 7
Second exam	20 %	2	0.08	3, 2, 4, 6, 8, 7

Bibliography

Consult the bibliography of the subjects of Food Processing Methods I and Food Processing Methods II and the one corresponding to each practice that you will find in the practicals script.