

Food Technology

Code: 102610
ECTS Credits: 6

2024/2025

Degree	Type	Year
2502445 Veterinary Medicine	OB	2

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Teaching groups languages

You can view this information at the [end](#) of this document.

Prerequisites

There are no prerequisites for taking this course. However, in order to ensure the proper achievement of the learning aims, it is recommended that students have basic knowledge about physics, chemistry, microbiology, and food science.

It is common to use sources of information in English and it is recommended that students have a good knowledge of this language.

Objectives and Contextualisation

Objectives and Contextualisation

The subject (materia) Food Science and Technology, which is taught in the 2nd year of the degree, provides a part of the specific competences that veterinarians must acquire during their training according to Order ECI

/333/2008 which establishes the requirements for the verification of official university degrees that qualify for the exercise of the Veterinary profession. The first competence that the graduates in Veterinary Medicine must have acquired is the control of the hygiene, the inspection, and the technology of the production and elaboration of foods for human consumption, from the primary production to the consumer.

The contents of Food Science and Technology is made up of two courses. Food Science in the first semester, in which the student must acquire the knowledge, theoretical and practical, about the characteristics, composition and alteration of foodstuffs for human consumption. And Food Technology in the second semester, in which the student acquires the foundations and principles of the technologies used to obtain healthy and safe foods.

Training objectives

At the end of the subject of Food Technology, students will be able to:

- Describe basic operations applied to food industries.
- Establish flow diagrams typical of the food industry.
- Describe the main process of transformation and / or conservation of foods, the consequences they have on the
- Identify the main characteristics of food industries derived from raw materials of animal origin.

Competences

- Apply food technology to the preparation of food for human consumption.
- Demonstrate knowledge of the rights and duties of the veterinarian, with a special focus on ethical principles
- Seek and manage information related with professional activity
- Work effectively in single or multidisciplinary teams and show respect, appreciation and sensitivity for the work of others.

Learning Outcomes

1. Analyse the processes used in the food industry for the conservation, transformation, storage and transport of foods.
2. Apply knowledge of basic sciences to food technology.
3. Identify and interpret the basic operations used in food industries to be able to program food conservation and/or transformation processes.
4. Seek and manage information related with professional activity
5. Specify quality criteria while taking into account the real functions of the food industry.
6. Work effectively in single or multidisciplinary teams and show respect, appreciation and sensitivity for the work of others.

Content

The subject consists of 2 units, whose contents are distributed in theory lessons, practical sessions and self-learning activities.

UNIT I. Basics of food industries

- Theoretical lessons

Topic 1. Processes and basic operations in food technology. Flow diagrams. Discontinuous and continuous processes. Description of the main processes and equipment used in the food industry.

Topic 2. High temperatures in food preservation. Blanching. Pasteurization and sterilization of packaged products. Continuous treatments. Equipment and processes used in industry. Action on microorganisms: DTT curves, coefficients D and Z. F0 calculation. Other applications: baking, frying, toasting, baking.

Topic 3. Introduction to chilled foods. Industrial refrigeration and systems for chilling and freezing in the food industry. Characteristics and selection of cooling agents. Regulation and control elements. Effects of low temperatures on raw materials and processed foods. Speed of reactions and food conservation. Ice crystalization and changes in the food structure.

- Practical sessions (Servei Planta de Tecnologia dels Aliments -SPTA-; seminars; computer classroom)
- Food industries: production systems (seminar)
- Psychometrics (seminar)
- Cooling and freezing systems (practical session at SPTA)
- Heat treatments: DTT curves (seminar at computer classroom)

UNIT II. Fundamentals of the industries from raw materials of animal origin

- Theoretical lessons

Topic 4. Technology of milk and derivatives. Composition and structure of milk. Microbiology of milk. Conservation treatments. Concentrated milk and powdered milk. Cream and butter. Coagulation. Other products.

Topic 5. Technology of fishery products. Composition and characteristics. Changes postmortem. Cooling and freezing. Fish processing.

Topic 6. Technology of meat and derivatives. Transformation of muscle in meat: normal and abnormal post-mortem metabolism in channels. Variability of meat. Cooling and freezing. Microbiology and meat conservation. Main families of emerging and processed derivatives.

- Practical sessions
- Pasteurization (practical session at SPTA)
- Eggs and eggproducts (seminar)
- Fish industry processing (seminar)
- Meat industry processing and meat products (seminar)
- Milk processing: Cheesemaking (practical session at SPTA) and Dairy products (laboratory practical session)
- Food Packaging (seminar)
- Food Shelf-life (seminar)
- Self-learning activity about meat refrigeration during transport

Activities and Methodology

Title	Hours	ECTS	Learning Outcomes
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Type: Directed

Laboratory practices	4	0.16	3, 6
Pilot plant practices	7	0.28	1, 5, 3, 6
Seminars	14	0.56	4, 3, 6
Theory class	27	1.08	1, 2, 5, 3
Type: Autonomous			
Online tests, self-learning activity, auto-evaluation, problem solving	36.5	1.46	1, 2, 4, 5, 3, 6
Self study	58	2.32	2, 4, 3

The methodology used in this course combines theoretical lessons and practical activities that expand and/or reinforce the knowledge acquired during theoretical lessons.

Practical sessions include laboratory practices, practices at Servei Planta Pilot de Tecnologia dels Aliments, a computer room practice and a self-learning activity that requires researching and selecting information in different resources and answering the proposed questions.

The teaching material used in the subject will be available in Moodle.

Moodle will be used as a mechanism for the exchange of information between professors and students.

Within the schedule set by the centre or degree programme, 15 minutes of one class will be reserved for students to evaluate their lecturers and their courses or modules through questionnaires.

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Assessment

Continuous Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
Exams	70%	3.5	0.14	1, 2, 5, 3
Online tests	30%	0	0	1, 2, 4, 5, 3, 6

Continuous assessment

The subject will be approved with a minimum overall score of 5 out of 10. The assessment will be individual and will be carried out continuously during the different training activities that are taught. The course is organized into two Units (I and II). Unit I has a weight of 40% of the final grade. Unit II has a weight of 60% of the final grade. The minimum grade for each Unit to calculate the weighted average to obtain the final grade is 5.

The grade for each Unit will be calculated as follows:

- 70% will correspond to the mark of the face-to-face exam, which will include all the theory, plant and laboratory practices, seminars and self-study activity. The exam has 2 parts: a) multiple choice questions and b) open-ended questions. The open-ended questions will not be corrected if a minimum grade of 4 out of 10 is not obtained in the multiple choice questions. A minimum mark of 5 is necessary in the exam to pass the Unit.

- 30% will correspond to the mark of the online tests in the Moodle classroom that all practical activities and self-learning have associated. Depending on the type and conditions of each practical activity, the test will be done during it or after finishing it. The closing date of the test will be announced for each activity and, once the date has passed, the test will not reopen. If the student has not attended to a practice, the value of the test grade of that practice to calculate the overall grade will be 0.

Resit

To participate in the resit, the student must have been previously assessed in a set of activities that represent a minimum of two thirds of the final grade of the subject. The resit will consist of an exam that will include questions about all the contents of the Unit that must be recovered.

To pass the subject, it is necessary to obtain a grade ≥ 5 in the resit exam corresponding to each Unit in order to average with the other Unit. To calculate the final grade, the weight of each Unit is maintained (40% Unit I and 60% Unit II).

The students will be considered not evaluable if they have participated in assessment activities that represent $\leq 15\%$ of the final grade.

Single assessment

The subject will be approved with a minimum overall score of 5 out of 10. The subject is organized into two Units (I and II). Unit I has a weight of 40% of the final grade. Unit II has a weight of 60% of the final grade. A minimum grade of 5 is necessary in each Unit to calculate the weighted average that gives rise to the final grade.

The single assessment consists of:

- An exam that will include all the theory, plant and laboratory practices, seminars and the self-study activity of Units I and II. The exam will have 2 parts: a) multiple choice questions and b) open-ended questions. The open-ended questions will not be corrected if a minimum grade of 4 out of 10 is not obtained in the multiple choice questions. The mark of this test corresponds to 70% of the mark of the subject. A minimum mark of 5 is necessary to pass the subject.

- The mark of the tests of the practical activities (laboratory practices, plant practices, seminars and self-study activity), which corresponds to 30% of the mark of the subject. The assessment of these activities will be carried out by means of a test on the single assessment date. If the student has not attended a practical activity, the value of the test for that activity to calculate the overall grade will be 0.

The date of the single assessment will be the same that the date of the examination of Unit II of the continuous assessment.

The same resit system, the same criterion of not evaluable and the same procedure for reviewing the grades will be applied as for continuous assessment.

The students will be considered not evaluable if they have participated in evaluation activities that represent $\leq 15\%$ of the final grade.

Bibliography

Online books:

Course bibliography:

<https://csuc-uab.primo.exlibrisgroup.com/discovery/search?query=any,contains,tecnologia%20dels%20aliments&>

<http://tools.ovid.com.are.uab.cat/fsta/uniautonombarcelona/>

<http://www.knovel.com/>

Books in paper from the Vet's Library

- Brennan J.G., J.R. Butters, N.D. Cowell i A.E.V. Lilley (1990) Food engineering operations. Ed. Elsevier Applied Science, Barking. Las operaciones en la ingeniería de alimentos. Ed. Acribia, 1998.

- Cheftel J.C. y H. Cheftel (1980) Introducción a la bioquímica y tecnología de los alimentos. Vol. 1. Ed. Acribia, Saragossa.

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- Lawrie R. (1998) Meat Science. Ed. Woodhead Publishing, Cambridge. (Existeix la traducció castellana -Ed. Acribia, 1977- d'una edició anterior).

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- Richardson, T. i J.W. Finley (eds.) (1985) Chemical changes in food during processing. Ed. AVI Publishing Company, Westport, Connecticut.

- Stadelman W.J. i O.J. Cotterill (1986) Eggscience and technology. Ed. AVI Publishing Company, Westport, Connecticut.

- Thapon J.-L. i C.-M. Bourgeois (1995) L'oeuf et les ovoproduits. Ed, Tech & Doc, París.

- Walstra, P., Geurts, T.J., Noomen, A., Jellema, A (2001). Ciencia de la leche y tecnología de los productos lácteos. Editorial Acribia S.A. Zaragoza.

Software

No software is needed

Language list

Name	Group	Language	Semester	Turn
(PAUL) Classroom practices	1	Catalan/Spanish	annual	morning-mixed
(PAUL) Classroom practices	2	Catalan/Spanish	annual	morning-mixed
(PAUL) Classroom practices	3	Catalan/Spanish	annual	morning-mixed
(PLAB) Practical laboratories	1	Catalan	annual	morning-mixed
(PLAB) Practical laboratories	2	Catalan	annual	morning-mixed
(PLAB) Practical laboratories	3	Catalan	annual	morning-mixed
(PLAB) Practical laboratories	4	Catalan	annual	morning-mixed
(PLAB) Practical laboratories	5	Catalan	annual	morning-mixed
(PLAB) Practical laboratories	6	Catalan	annual	morning-mixed
(SEM) Seminars	1	Catalan	annual	morning-mixed
(SEM) Seminars	2	Catalan	annual	morning-mixed
(SEM) Seminars	3	Catalan	annual	morning-mixed
(SEM) Seminars	4	Catalan	annual	morning-mixed
(SEM) Seminars	5	Catalan	annual	morning-mixed
(SEM) Seminars	6	Catalan	annual	morning-mixed
(TE) Theory	1	Catalan	annual	morning-mixed
(TE) Theory	2	Catalan	annual	morning-mixed