

Food Sciences

Code: 102611
ECTS Credits: 3

Degree	Type	Year	Semester
2502445 Veterinary Medicine	OB	2	1

Contact

Name: Marta Capellas Puig

Email: marta.capellas@uab.cat

Teaching groups languages

You can check it through this [link](#). To consult the language you will need to enter the CODE of the subject. Please note that this information is provisional until 30 November 2023.

Teachers

Victoria Francisca Ferragut Perez

Montserrat Mor-Mur Francesch

Josep Yuste Puigvert

Prerequisites

There are no official prerequisites, but it is recommended that the students have passed the subjects of Microbiology and Biochemistry of the first year of the Degree. Students must be able to read and understand academic texts in Catalan and Spanish.

Objectives and Contextualisation

Our health depends on what we eat daily and how we do it. Also, our economy depends on that, since the agri-food sector is one of the most active sectors in our country. In Catalonia, there are many industries that are dedicated to the production or the processing of raw materials to convert them into food. On the one hand, industries must ensure that food is safe and healthy, and that it remains appetizing for as long as possible. On the other hand, the administration must carry out official controls to ensure that food legislation is accomplished. According to Order ECI/333/2008 of 13 February, which establishes the requirements for the verification of the official university degree that qualifies for the exercise of the Veterinary profession, the first competence that Veterinary graduates must have acquired is the control of the hygiene, the inspection and the technology of the production and elaboration of foods of human consumption from the primary production until the consumer. Food Science and Technology related subjects, which are taught in the 2nd year of the Veterinary Degree, contribute to a part of the specific competences necessary for the exercise of the profession. In the first semester, in the subject Food Science, the students must acquire the theoretical and

practical fundamentals about the characteristics, composition and alteration of foods of human consumption. In the second semester, Food Technology is studied, in which the foundations and principles of the technologies used for obtaining healthy and safe foods are acquired.

After completing the course, the students are expected to:

- Recognize the components and ingredients of foods, and their functions and properties
- Recognize the additives and their main functions
- Analyze components and their properties in specific foods
- Identify specific food quality indicators
- Relate components, properties and quality indicators
- Identify the mechanisms of food deterioration
- Evaluate the possibility and probability of deterioration of a food due to a specific cause

Competences

- Analyse, synthesise and resolve problems and make decisions.
- 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, synthesise and resolve problems and make decisions.
2. Identify foodstuffs and relate their functions, characteristics, interactions and evolution.
3. Seek and manage information related with professional activity
4. Work effectively in single or multidisciplinary teams and show respect, appreciation and sensitivity for the work of others.

Content

The following contents are distributed in theory, practice, seminars and self-learning activities:

Theory: 11 h.

Lecture 1. Water in food. Structure and properties State of water in food. Water activity. Sorption isotherms.

Lecture 2. Biotic modifications. RASFF Portal. Bacteria. Virus. Parasites Enzymes and toxins produced by microbial metabolism. Factors that affect the growth and survival of microorganisms in food. The theory of obstacles.

Lecture 3. Components and ingredients of food: functions and properties. Food: definition. Nutritious and non-nutritive components Additives and technological adjuvants. Functional properties Functional additives.

Lecture 4. Abiotic modifications: chemical and enzymatic reactions. Non-enzymatic browning reactions. Oxidative reactions Antioxidants Reactions of the pigments. Degradation of protein and non-protein

nitrogenous components. Lipolysis Enzymatic oxidation of lipids. Enzymatic degradation of carbohydrates. Enzymatic browning reactions.

Seminars: 4 h

Fermented foods.

Presentation of self-learning work.

Practical sessions: 11 h

Laboratory:

- Food rheology.
- Enzymatic browning and blanching.
- Glazing and oxidation of fishery products.
- Stability of food.

Pilot processing plant practices (Servei Planta Pilot de Tecnologia dels Aliments -SPTA-):

- General knowledge of the pilot plant.
- Preparation of a liquid food.

Methodology

The methodology used in this subject combines the following presential and non-presential activities:

- Theory lectures in which the basic concepts of the subject are presented.
- Short individual self-learning exercise. Students will have to solve a short self-learning exercise that will be stated and solved via Moodle.
- Classroom work seminar.
- Laboratory practices: they complete and reinforce the knowledge presented in the theory lectures and allow the acquisition of work skills in the laboratory and the experimental understanding of concepts. Students will have guide notes available for all the practices and will have to do a previous comprehensive reading of them before each practice. During the practical session, students must collect the results to answer the test that will be done at the end of the session. If a practice has not been attended, the value of the test for that practice to calculate the overall grade will be 0. Students must pass the Basic Laboratory Safety Test before the start of the first practical session.
- Pilot processing plant practical sessions: they complete and reinforce the knowledge presented in the theory lectures and allow the acquisition of work skills in the pilot plant. Students must perform a previous comprehensive reading of the guide notes of each practice. Before the first session, students must pass the Food Technology Plant Safety Test, following the instructions found in the Moodle classroom.
- Self-learning work in groups of 4 students, for the preparation and presentation of a case. This work implies searching and selecting information from various sources, answering to the questions raised, and presenting and discussing it with the teachers and other class groups, during the last seminar scheduled in the subject program.

The teaching material used in the subject will be available at Campus Virtual.

Annotation: 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.

Activities

Title	Hours	ECTS	Learning Outcomes
Type: Directed			
Laboratory practices	8	0.32	1, 2, 4
Lectures	11	0.44	2
Pilot plant practices	3	0.12	1, 2, 4
Seminars	4	0.16	1, 3, 2, 4
Type: Supervised			
Programmed tutorial	1	0.04	1, 2
Type: Autonomous			
Autonomous study and bibliography consultation	28.25	1.13	1, 3, 2
Brief self-learning exercise, preparation for group work, self-assessment exercises and online tests	18	0.72	1, 3, 2, 4

Assessment

Continuous assessment

The assessment will be carried out continuously during the different activities that have been programmed. The maximum grade that can be obtained is 10. The subject will be passed with a minimum grade of 5. The grade will be calculated as follows:

- Multiple choice exam: 50% weight in the overall grade. At the end of all the training activities and on the date specified in the schedule, the student will take a written test on all the contents and activities of the subject. To pass the subject it is necessary to obtain a minimum mark of 5 points out of 10 in this exam.
- Brief individual self-study exercise: 10% weight in the overall grade. The student must search for information in a database and bibliography, answer an online questionnaire and hand in a task.
- Laboratory practices: 15% of weight in the overall mark. The assessment will be carried out through a test at the end of each laboratory practice. If a practice has not been attended, the value of the test of that practice to calculate the overall grade will be 0.
- Self-learning group-work: 25% of weight in the overall grade. The student will have to carry out a work in groups of 4 people from the same group of practices. The work will be presented in a public presentation, in which other groups will also present, during the last seminar of the subject, according to the programmed schedule.

Resit

To 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 a single test type exam on all the contents and activities of the subject. To pass the subject it is necessary to obtain a minimum grade of 5 out of 10 in the resit exam.

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

Single assessment

The single assessment test and the delivery of the evidences will be carried out on the same date that the exam of the continuous assessment. The maximum grade that can be obtained is 10. The subject will be passed with a minimum grade of 5. The grade will be calculated as follows:

- Multiple choice exam: 50% weight in the overall grade. The student will take a written test on all the contents and activities of the subject. To pass the subject it is necessary to obtain a minimum grade of 5 out of 10 in this exam.

- Brief individual self-study exercise: 10% weight in the overall grade. The student must search for information in a database and in bibliography, answer an online questionnaire and hand in a task. The delivery of the evidences of this exercise will be carried out on the date of the single evaluation.

- Laboratory practices: 15% of weight in the overall grade. The assessment will be carried out by means of a test on the single evaluation date. If a practice has not been attended, the value of the test of that practice to calculate the overall mark will be 0.

-Self-learning - group-work: 25% of weight in the overall grade. The work will be carried out in group if there are more students taking part in the single assessment. Otherwise, it will be done individually. The delivery will be made on the single assessment date.

The same resit system will be applied as in the continuous assessment.

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

Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
Brief individual self-learning exercise test	10	0.2	0.01	1, 3, 2
Laboratory sessions tests	15	0.3	0.01	1, 3, 2
Presentation and discussion of self-learning-group work	25	0.25	0.01	1, 3, 2, 4
Test exam	50	1	0.04	1, 2

Bibliography

- Course bibliography:

<https://bibcercador.uab.cat/discovery/search?query=any,contains,ciencia%20dels%20aliments&tab=Course>

- Other online books accessible from the UAB library's website:

<http://www.knovel.com/web/portal/browse/subject/60/filter/0/>

From this web, we list some that can be useful:

Chemical Deterioration and Physical Instability of Food and Beverages

Chilled Foods

Encyclopedia of Food Microbiology

Essentials of Food Sanitation

Food Additives Data Book

Food Spoilage Microorganisms

Oxidation in Foods and Beverages and Antioxidant Applications, Volume 1 - Understanding Mechanisms

Of Oxidation and Antioxidant Activity

Oxidation in Foods and Beverages and Antioxidant Applications, Volume 2 - Management in Different Industry Sectors

Principles of Food Chemistry

Stability and Shelf-Life of Food

Software

Not necessary.