



Information about the subject

Degree: Bachelor of Science Degree in Veterinary Medicine

Faculty: Faculty of Veterinary Medicine and Experimental Sciences

Code: 1260504 **Name:** Food Technology I

Credits: 6,00 **ECTS Year:** 4 **Semester:** 1

Module: Module of Hygiene, Technology and Food Safety

Subject Matter: Food Technology **Type:** Compulsory

Department: Animal Production and Public Health

Type of learning: Classroom-based learning

Languages in which it is taught: Spanish

Lecturer/-s:



Module organization

Module of Hygiene, Technology and Food Safety

Subject Matter	ECTS	Subject	ECTS	Year/semester
Food Technology	12,00	Food Technology I	6,00	4/1
		Food Technology II	6,00	4/2
Food Security and Public Health	12,00	Food hygiene and safety I	6,00	4/2
		Food hygiene and safety II	6,00	5/1

Recommended knowledge

It has not established



Learning outcomes

At the end of the course, the student must be able to prove that he/she has acquired the following learning outcomes:

- R1 The student knows the main characteristics of the raw materials used in the meat, fish and shellfish industry.
- R2 The student understands the main food preservation techniques.
- R3 The student has a general idea of food processing techniques and technological treatments to be implemented.
- R4 The student has basic knowledge regarding the different products that can be obtained.
- R5 The student is able to identify and establish quality criteria for a product both prior to its use and as an end product.
- R6 The student relates the handling of animals and their health status with the quality of the product that is going to enter a technological process.
- R7 The student identifies the main physical, chemical and microbiological hazards that can occur throughout the manufacturing process of the different products.
- R8 The student is capable of establishing criteria and having a critical attitude towards anomalous situations that may arise.



Competencies

Depending on the learning outcomes, the competencies to which the subject contributes are (please score from 1 to 4, being 4 the highest score):

BASIC		Weighting			
		1	2	3	4
CB2	Capacity to apply knowledge to work or occupation in a professional way and have the competences that are proved by preparing and arguing topics and problem-solving in their specific field of study.				X
CB3	Capacity to gather and interpret relevant data usually within their specific field of study and capacity to make judgments that include reflection on relevant social, scientific or ethical issues.		X		
CB4	Capacity to communicate information, ideas, problems and solutions at specialist and non-specialist levels.			X	
CB5	Capacity to develop those learning skills needed to undertake further studies with a high degree of autonomy.			X	

GENERAL		Weighting			
		1	2	3	4
CG0	Capacity to speak well in public.				X
CG1	Knowing and applying hygiene control, inspection, technology for the production and processing of food for human use from primary production to consumer.				X
CG5	Understanding and applying laws, regulations and administrative provisions in all areas of the veterinary profession and public health, understanding the ethical implications of health in a changing global context.				X
CG6	Developing professional practice, acquiring skills related to teamwork, with an efficient use of resources and quality management.				X
CG7	Identifying emerging risks in all areas of the veterinary profession.			X	



SPECIFIC	Weighting			
	1	2	3	4
E55	Knowing and applying food components and characteristics.			X
E56	Knowing and applying food collection, storage and processing.			X
E57	Knowing and applying food changes, alterations and adulterations.			X

TRANSVERSAL	Weighting			
	1	2	3	4
T1	Capacity of analysis, synthesis, implementation of knowledge for problem-solving and decision-making.		X	
T2	Understanding and applying the scientific method to professional practice including evidence-based medicine.	X		
T3	Basic knowledge of the veterinary profession: legal, economic, administrative, planning and time management issues and the veterinarians' society together with the importance of monitoring quality, standardization and protocols of veterinary practice.		X	
T4	Mastering fluency in oral and written mother tongue communication, listening and responding effectively using a language appropriate to audience and context.		X	
T6	Using information technology to communicate, share, search for, collect, analyze and manage information, especially related to the veterinarian practice.	X		
T7	Ability to adapt to new situations, self-critical ability, being aware of personal limitations and understanding when and where seeking and obtaining advice and professional help.		X	
T8	Efficient and effective work, both independently and as a member of a multidisciplinary team or unit, showing respect, appreciation and sensitivity to the work of others.			X
T9	Keeping an ethical behaviour in the exercise of given responsibilities toward the profession and society.			X
T10	Ability to learn, to research, and to be aware of the need to keep knowledge updated, and attending training programs.			X



T11 Ability to work in an international context, appreciating diversity and multiculturalism, through the knowledge of foreign cultures and customs.

x



Assessment system for the acquisition of competencies and grading system

Assessed learning outcomes	Granted percentage	Assessment method
	50,00%	Written assessment of acquired knowledge and skills. The test may consist of a series of open-ended questions or multiple-choice questions about the theoretical contents of the module and/or practical exercises (problem-solving).
	10,00%	Evaluation of the use of the practical lessons in the classroom, of problems or computer science, seminars and tutorials, by means of participation, computer-supported problem solving and the elaboration of the corresponding reports.
	15,00%	Evaluation of the practical laboratory work, which must demonstrate the competences acquired by the student and his or her ability to use them to solve the different situations and problems that arise in a laboratory; this assessment may consist of one of the following methods, or a combination of several of them: an individual written test, the individual or group performance of a laboratory experience, the delivery of an individual or group report on the work carried out in the laboratory.
	15,00%	Evaluation of group work through a system of continuous assessment throughout the course based on the delivery of assignments the objectives and content of which will be proposed by the teacher.
	10,00%	Evaluation of activities in which the student must do some research individually and structure information related to each of the topics through a system of continuous assessment throughout the course based on the delivery of papers, the objectives and contents of which will be proposed by the teacher.



Observations

MENTION OF DISTINCTION:

According to Article 22 of the Regulations governing the Evaluation and Qualification of UCV Courses, the mention of "Distinction of Honor" may be awarded by the professor responsible for the course to students who have obtained, at least, the qualification of 9 over 10 ("Sobresaliente"). The number of "Distinction of Honor" mentions that may be awarded may not exceed five percent of the number of students included in the same official record, unless this number is lower than 20, in which case only one "Distinction of Honor" may be awarded.

Learning activities

The following methodologies will be used so that the students can achieve the learning outcomes of the subject:

- M1 On-site training activity aimed primarily at acquiring knowledge acquisition skills. It is characterised by the fact that students are spoken to. Also called master class or exposition, it refers to the oral presentation made by the teacher, (with the support of blackboard, a computer and a projector for the display of texts, graphs, etc.), in front of a group of students. They are expository, explanatory or demonstrative sessions of contents. The size of the group is determined by the limit or physical capacity of the classroom; therefore, it is a single group.
- M2 On-site training activity aimed primarily at obtaining knowledge application and research skills. Knowledge is built through interaction and activities. The activity consists of supervised monographic sessions with shared participation (teachers, students, experts). The size of the group is variable, from one large group to various small groups, with a minimum of 6 students to ensure interaction. The evaluation will be based on follow-up records kept by the teacher. Participation and the development of the capacity to problematize should be taken into account.
- M4 On-site training activity in groups that takes place in the classroom. It includes working with documents and formulating ideas without handling animals, organs, objects, products, or corpses (e.g., work with articles or documents, clinical case studies, diagnostic analyses, etc.). It would correspond to "Animal-free supervised practical work", type e1, from the European evaluation of EAEVE. The size of the group is variable, in a range of 10 to 20 students.



- M5 On-site training activity in groups that takes place in the Computer Lab where the computer is used as support for learning. It includes work with computer models, specific software, Web queries, etc. It would correspond to "Animal-free supervised practical work", type e1, from the European evaluation of EAEVE. The size of the group is variable, in a range of 10 to 20 students.
- M6 On-site training activity in groups carried out in the laboratory. It includes the sessions where the students develop laboratory experiments, make dissections or use the microscopes for the study of histological or histopathological samples actively and autonomously, under the supervision of the professor. It also includes work with healthy animals, objects, products, corpses (e.g., animal handling, bacteriological practices, physiology or biochemistry, meat inspection, etc.). It would correspond to the "Supervised practical non-clinical animal work" type e2 of the European evaluation of EAEVE. The size of the group is variable, in a range of 10 to 20 students.
- M8 A set of on-site training activities carried out by the teacher to provide personalised attention to the student or in small groups with the aim of reviewing and discussing the materials and topics presented in classes, seminars, readings, carrying out projects, etc. The aim is to ensure a truly comprehensive education of the student rather than a mere transfer of information. It is, therefore, a personalized assistance relationship in which the tutor assists, facilitates and guides one or more students in the learning process.
- M9 Set of processes that attempt to evaluate the learning outcomes of students expressed in terms of acquired knowledge, capacities, skills or abilities developed and manifested attitudes. It covers a wide range of activities that can be developed for students to demonstrate their training (e.g. written, oral and practical tests, projects or assignments). It also includes the Official Calls.
- M10 Autonomous training activity, including activities and coursework, bibliographic searches. The results obtained from unsupervised group and teamwork will be evaluated, with particular attention paid at the time of evaluation to the acquisition of specific knowledge development skills through group work.
- M11 Autonomous training activities related to personal study, or the preparation of individual course assignments. The individual preparation of readings, essays, problem solving, papers, reports, etc. will be evaluated through presentations or submissions during theoretical classes, practical classes, seminars and/or tutorials. The evaluation of the submitted papers will consider the structure of the paper, the quality of the documentation, originality, spelling and presentation.



IN-CLASS LEARNING ACTIVITIES

	LEARNING OUTCOMES	HOURS	ECTS
Theoretical lessons (TL) M1	R1, R2, R3, R4	40,00	1,60
Seminars (S) M1	R3	2,00	0,08
In-Classroom Practice (ICP) M4	R1, R2, R3, R4	2,00	0,08
Laboratory Practice (LP) M6	R1, R2, R3, R4	11,00	0,44
Tutorial M8	R1, R2, R3, R4	2,00	0,08
Evaluation (Ev) M9	R1, R2, R3, R4	3,00	0,12
TOTAL		60,00	2,40

LEARNING ACTIVITIES OF AUTONOMOUS WORK

	LEARNING OUTCOMES	HOURS	ECTS
Group work M10	R1, R2, R3, R4	40,00	1,60
Individual work M11	R1, R2, R3, R4	50,00	2,00
TOTAL		90,00	3,60



Description of the contents

Description of the necessary contents to acquire the learning outcomes.

Theoretical contents:

Content block	Contents
INTRODUCTION	Unit 1.1. The food technology industry Unit 1.2. Food technology and the veterinary profession
FOOD COMPONENTS AND CHARACTERISTICS	Unit 2.1. Composition and general structure of the main food components. Unit 2.2. Sensory properties: colour, smell, taste, texture. Unit 2.3. Nutritional properties: Nutritional function. Addition of nutrients in technological processes Unit 2.4. Functional properties: applied to the food industry
ANALYSIS AND QUALITY CONTROL	Unit 3.1. Quality from the consumer's perspective Unit 3.2. Quality parameters Unit 3.3. Sensory analysis: basic concepts, types and applications in the food industry Unit 3.4. Introduction to Hazard Analysis and Critical Control Points (HACCP)
Technology of meat products	Unit 4.1. Overview of the sector Unit 4.2. Composition and structure Unit 4.3. Transformation of muscle into meat Unit 4.4. Sensory, nutritional and functional characteristics Unit 4.5. Chemical, enzymatic and microbiological aspects Unit 4.6. Alterations in meat and meat products (PSE, DFD meat) Unit 4.7. Conservation methods Unit 4.8. Meat product technology: fresh, cured and heat-treated



FISH AND SHELLFISH TECHNOLOGY

- Unit 5.1. Overview of the fishing sector
- Unit 5.2. Composition and characteristics of fish and shellfish. Sensory, nutritional and functional characteristics.
- Unit 5.3. Chemical, enzymatic and microbiological aspects
- Unit 5.4. Conservation methods
- Unit 5.5. Technology of fishing products
- Unit 5.6. Fraud in the sector

Organization of the practical activities:

	Content	Place	Hours
PR1.	Hydrolysis, moisture and ashes	Laboratory	3,50
PR2.	Soxhlet, enzymatic browning	Laboratory	3,50
PR3.	Bromatological analysis: Kjeldhal, fraud and water retention capacity	Lecture room	3,50

Temporary organization of learning:

Block of content	Number of sessions	Hours
INTRODUCTION	1,00	2,00
FOOD COMPONENTS AND CHARACTERISTICS	6,00	12,00
ANALYSIS AND QUALITY CONTROL	4,00	8,00
Technology of meat products	11,00	22,00
FISH AND SHELLFISH TECHNOLOGY	8,00	16,00



References

- ALEIXANDRE BENAVENT, J.L. 1997 Food preservation
CENZANO DEL CASTILLO, I. 1993 New food industries manual
NIELSEN, S.S. 2008 Food analysis
OWEN R. FENNEMA, 2010 Food Chemistry, 3rd edition
ROLAND P. CARPENTER, DAVID H. LVON, TERRV A. HASDELL 2002, Sensory analysis in the development and control of food quality
BENITEZ M. 2013. Fish technology. IC.
BONET M. 2013. Elaboration of frozen fish products. IC.
CAMPOS R. 2013. Conditioning of fish and seafood. IC.
CANOURA J. 2013. Preparation of precooked and cooked fish. IC.
FEINER, G. 2018, Manual of meat products, ACRIBIA
HALL, G.M. 2001 Fish processing technology. ACRIBIA
PRICE, J.F., MEAD G.C. 1994 Science of meat and meat products. ACRIBIA
RICHARDSON, R.I., 2001 Poultry meat science. ACRIBIA
Organization of the Unit Nations for Food and Agriculture www.fao.org Ministry of Agriculture and Fisheries, Food and Environment www.mapama.gob.es Spanish Agency of Consumption, Food Safety and Nutrition www.aecosan.msssi.gob.es