UAB
Universitat Autònoma de Barcelona

Fish and Fishing Products

Code: 102645
ECTS Credits: 6

2024/2025

Degree	Type	Year
2501925 Food Science and Technology	OT	4
2502445 Veterinary Medicine	OT	5

Contact

Name: Bibiana Juan Godoy

Email: bibiana.juan@uab.cat

Teachers

Roser Sala Pallarés

Bibiana Juan Godoy

Teaching groups languages

You can view this information at the end of this document.

Prerequisites

There are no prerequisites, but it is convenient for the student to refresh the knowledge acquired in the subjects of the previous courses: Microbiology and parasitology, Analysis and control of food quality, Food toxicology, Food Microbiology and Processing Methods I and II.

Objectives and Contextualisation

The subject "Fish and fishery products" is an optional subject of the "materia" "Food Technology" that aims to give an overview of the most important aspects in the production of these types of foods, so that the student will be able to:

- Identify the main species of fishery products of frequent consumption and the usual methods of capture.
- Analyze factors that affect the quality and food safety of marine and aquaculture products.
- Analyze the composition, variability and the most important factors that influence the technological processes, as well as the agents that can deteriorate the product.
- Identify the biochemical and physiological processes that occur after the death of the fish, the freshness indexes and the most suitable means to maintain their quality.
- Determine the conservation and transformation processes and the physico-chemical, microbiological and sensory changes that occur in the fish.
- Establish the quality control applicable to the fishery products industry and base the distribution and marketing conditions.

- Diversify the products and learn the full use of fishery products.
- Recognize technical issues of a productive nature or of raw materials Provide reasoned ideas to improve the productive activity of a fishing industry.

Competences

Food Science and Technology

- Analyse, summarise, resolve problems and make professional decisions.
- Apply knowledge of the basic sciences to food science and technology.
- 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.
- Describe the principles of food conservation systems and the characteristics and properties of packaging materials and systems.
- Develop individual learning strategies and planning and organisation skills.
- 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.
- Search for, manage and interpret information from different sources.
- 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.
- Use IT resources for communication, the search for information within the field of study, data processing and calculations.

Veterinary Medicine

- Analyse, synthesise and resolve problems and make decisions.
- 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
- Demonstrate knowledge, understanding and differentiation of the main biological agents of veterinary interest.
- Work effectively in single or multidisciplinary teams and show respect, appreciation and sensitivity for the work of others.

Learning Outcomes

1. Analyse the importance of microorganisms in foods and understand the biotic and abiotic factors that affect their development in these substrates.
2. Analyse the importance of microorganisms in the field of food and understand the biotic and abiotic factors that affect development in these substrates.
3. Analyse, summarise, resolve problems and make professional decisions.
4. Analyse, synthesise and resolve problems and make decisions.
5. Apply the scientific method to resolving problems.
6. Apply the technological processes that are specific to milk and dairy products, meat and meat derivatives, fish products, egg products and vegetable products, and understand the modifications to the final product that these processes make.
7. Communicate effectively with both professional and non-professional audiences, orally and in writing, in the first language and/or in English.
8. Correctly process samples of the different types of foods for subsequent microbiological, chemical or physicochemical analysis.
9. Describe the processes of spoilage and deterioration of foods.
10. Develop individual learning strategies and planning and organisation skills.
11. Identify the control parameters of deterioration and spoilage processes.

12. Recognise the changes, alterations and adulterations suffered by milk, meat, fishing products, eggs, plants and derived products, as well as products made in collective catering establishments.
13. Recognise the changes, spoilage and adulterations that can affect milk, meat, fish products, eggs, vegetables and products deriving from these, and also products made in group catering businesses.
14. Recognise the circumstances that cause milk, meat, fishing products, eggs, plants and derived products, as well as products made in collective catering establishments to be unfit for human consumption and justify why.
15. Recognise the dangers to milk, meat, fishing products, eggs, plants and derived products, as well as products made in collective catering establishments, and evaluate the risk involved for different consumers.
16. Recognise the influence of the intrinsic, extrinsic and implicit characteristics of milk, meat, fishing products, eggs, plants and derived products, as well as products made in collective catering establishments, in the presence or persistence of a danger.
17. Recognise the role of microorganisms as causal agents of food-transmitted diseases.
18. Recognise the role of microorganisms as causal agents of foodborne disease and appreciate their role in industrial processes.
19. Relate the characteristics of foods to their physical properties.
20. Search for, manage and interpret information from different sources.
21. Select food conservation methods that slow down deterioration.
22. Select processes of conservation, transformation, transport and storage that are suited to foods of animal and plant origin.
23. Select suitable conservation, transformation, transport and storage processes for foods of animal and plant origin.
24. Use IT resources for communication, the search for information within the field of study, data processing and calculations.
25. Work effectively in single or multidisciplinary teams and show respect, appreciation and sensitivity for the work of others.

Content

CHAPTER I. INTRODUCTION

Topic 1. Introduction. Brief historical review. Global organization of fishing. Production and consumption.

Topic 2. Fishing systems and species of consumption. Fishing gear. Species of fish and shellfish of frequent consumption in Spain. Most important biological and morphological characteristics.

CHAPTER II. COMPOSITION, TOXICITY AND POSTMORTEM CHANGES

Topic 3. General aspects. General composition: factors. Edible fraction. The fish as a food.

Topic 4. Proteins. Protein composition and functional properties. Muscle type: features. Connective tissue. Effect of technological treatments.

Topic 5. Lipids. Lipid composition: characteristics. Fat distribution

Topic 6. Minority components. Vitamins and liposoluble. Inorganic substances: macro and microelements.

Topic 7. Non-protein nitrogenous substances. Types of substances. Freshness Index. Technological implications.

Topic 8. Quality and safety of aquaculture products. Effect of nutrition on nutritional value and flesh quality. Pigmentation in salmonids and crustaceans.

Topic 9. Strange and toxic substances. Contaminants. Toxins. Parasites

Topic 10. Post-mortem changes and spoilage of fresh fish. Rigor mortis. Factors affecting the rigor mortis in the technological processes and in the quality of the fish. Sensorial changes. Spoilage indicators.

CHAPTER III. FISHERY PRODUCTS TECHNOLOGY

Topic 11. Preliminary treatments. Handling: classification and selection, cleaning, evisceration, peeling, filing. Molluscs depuration. Diversity of fishery products. Labeling. Current regulations

Topic 12. Refrigeration. Cooling methods. Icing and use. Stowage methods. Complementary methods.

Topic 13. Freezing. Freezing phases and methods. Glazing.Freezing storage. Thawing. Quality and spoilage.

Topic 14. Smoking. Process. Hot and cold smoking. Quality and spoilage.

Topic 15. Salting and drying. Saltwater technology: main factors. Drying: technology. Quality.

Topic 16. Light preserves. The process of "anchoa". Pickling. Squid. Caviar.

Topic 17. Preserves. Process. Quality and spoilage.

Topic 18. Minced fish, surimi and derivatives. Making surimi: technology. Quality.

Topic 19. Other non-food byproducts. Fishmeal and fish oil. Biocomponent derivatives. Non-food products.

Activities and Methodology

Title	Hours	ECTS	Learning Outcomes
Type: Directed			
Practicals and attending to the visits	16	0.64	9, 11, 13, 15, 19, 21, 25
Seminars	8	0.32	7, 9, 11, 13, 15, 19, 21
Theory	25	1	1, 2, 6, 9, 11, 8, 18, 17, 13, 12, 15, 19, 22, 23, 21, 16, 14
Type: Supervised			
Tutorials	4	0.16	9, 11, 13, 15, 19, 21
Type: Autonomous			
Case preparation	33	1.32	4, 5, 20, 9, 10, 11, 13, 15, 19, 21, 24
Self study	60	2.4	4, 20, 9, 10, 13, 19, 21, 24

The course development is based on the following activities:

Face-to-face:

1) Theoretical classes: consisting of master classes with TIC support, which will explain the fundamental concepts of the basic topics of the subject.

2) Practical classes: Laboratory sessions where you will work with specific analytical techniques.

3) Pilot Plant: obtention of surimi and gels.

4) Visits to the Central fishmarket and fish processing industries.

5) Seminars for resolution and presentation of self-learning activities: During the seminars each student / group will have to present the work done.

6) Tutorials

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.

Assessment

Continous Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
Control I	25%	2	0.08	1, 2, 5, 20, 9, 10, 11, 13, 12, 19, 24
Control II	25%	2	0.08	1, 2, 4, 6, 20, 9, 10, 11, 18, 17, 13, 12, 15, 19, 22, 23, 21, 16, 14
Lab Practicals and attending visits	30%	0	0	4, 5, 20, 9, 10, 11, 8, 13, 15, 19, 21, 25, 24
Self learning activities	20%	0	0	3, 4, 20, 7, 9, 10, 11, 13, 15, 19, 21, 24

The competences of this subject will be evaluated by means of:

a) First Control of Chapters I and II. It will include the theoretical, practical and individual self-learning content related to a weight of 25% of the final mark.

b) Second Control of Chapter III. It will include the theoretical, practical and individual self-learning content related to a weight of 25% of the final mark.

c) Self-learning activities (3): 20%

f) Practices and visits: the attendance and the presentation and evaluation of the questionnaire of the sessions of practices and visits will be valued with 30% of the final note.

It will be considered that a student is not evaluable if he has participated in assessment activities that represent = 15% of the final grade

To pass the subject, it is requested:

a) a minimum of 5 points (over 10) in each of the two controls; in case this mark is not obtained, you must present yourself to the recovery exam.

b) a minimum of 5 points (out of 10) in group self-learning activities.

c) attend a minimum of 800% of the practical sessions, visits and discussions of the self-learning activities.

Unique assessment

The single assessment will consist of a single test in which the contents of the entire subject program will be assessed. The test will consist of open questions to develop. The grade obtained in this synthesis test will account for 100% of the final grade of the subject.

The single assessment test will take place on the same day, time and place as the last continuous assessment test of the subject. The single assessment can be recovered on the day set for the recovery of the subject.

The review of the final qualification follows the same procedure as for the continuous assessment.

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- *The Use of* Ice on Small *Fishing* Vessels - 2003 *FAO*
- Freezing and refrigerated storage in fisheries - 1994 FAO
- Manual on fish canning- FAO
- Safety and Quality Issues in Fish Processing (en www.knovel.com)
- Seafood Processing By-Products
- Seafood Processing: Technology, Quality andSafety
- Handbook of Meat, Poultry and Seafood Quality
- Handbook of Seafood Quality, Safety and Health Applications

WEBS

http://www.fao.org/

http://www.seafood.nmfs.noaa.gov/Program_Services.html

Generalitat. Pesca i aqüicultura

http://www.magrama.gob.es/es/pesca/temas/default.aspx

http://www.seafoodsource.com/

http://www.eurofishmagazine.com/

Software

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Language list

Name	Group	Language	Semester	Turn
(PAUL) Classroom practices	1	Catalan	first semester	morning-mixed
(PLAB) Practical laboratories	1	Catalan	first semester	morning-mixed
(PLAB) Practical laboratories	2	Catalan	first semester	morning-mixed

(TE) Theory	1	Catalan	first semester	morning-mixed