

Degree programme	Type	Course
Food Science and Technology	OP	4
Veterinary Medicine	OP	5

Contact lecturer

Name : Bibiana Juan Godoy

Email : bibiana.juan@uab.cat

Teaching staff

Roser Sala Pallarés

Bibiana Juan Godoy

Group languages

You can consult this information at the [end](#) of the 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

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.

Learning outcomes

1. Analyse, summarise, resolve problems and make professional decisions.
2. Apply the scientific method to resolving problems.
3. Search for, manage and interpret information from different sources.
4. Use IT resources for communication, the search for information within the field of study, data processing and calculations.
5. Communicate effectively with both professional and non-professional audiences, orally and in writing, in the first language and/or in English.
6. Develop individual learning strategies and planning and organisation skills.
7. Relate the characteristics of foods to their physical properties.
8. Describe the processes of spoilage and deterioration of foods.
9. Identify the control parameters of deterioration and spoilage processes.
10. Select food conservation methods that slow down deterioration.
11. 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.
12. Select processes of conservation, transformation, transport and storage that are suited to foods of animal and plant origin.
13. 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.
14. Correctly process samples of the different types of foods for subsequent microbiological, chemical or physicochemical analysis.
15. Analyse the importance of microorganisms in foods and understand the biotic and abiotic factors that affect their development in these substrates.
16. Recognize the role of microorganisms as causative agents of foodborne illnesses and appreciate their role in industrial processes.
17. Analyse, synthesise and resolve problems and make decisions.
18. Work effectively in single or multidisciplinary teams and show respect, appreciation and sensitivity for the work of others.
19. Analyse the importance of microorganisms in the field of food and understand the biotic and abiotic factors that affect development in these substrates.
20. Recognise the role of microorganisms as causal agents of foodborne disease and appreciate their role in industrial processes.
21. 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.
22. 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.
23. 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.
24. 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.
25. Select suitable conservation, transformation, transport and storage processes for foods of animal and plant origin.

Contents

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.

Learning activities and methodology

Title	Hours	ECTS	Learning outcomes
Case preparation	33	1.32	
Practicals and attending to the visits	16	0.64	
Theory	25	1	
Seminars	8	0.32	
Tutorials	4	0.16	
Self study	60	2.4	

The methodology used in this course during the learning process will follow a blended (semi-presential) format. The course development is based on the following activities:

On-site activities

1. Theoretical classes: consisting of face-to-face lectures in which the fundamental concepts of the basic topics of the subject will be explained.
2. Practical classes: laboratory sessions where specific analytical techniques will be applied, including

- surimi and related products.
- 3. Visits to industries/markets.
- 4. Seminars for the resolution and presentation of self-learning activities.
- 5. Lectures by industry experts.

The teaching materials used in the course will be available on Moodle.

In this course, the use of Artificial Intelligence (AI) technologies is permitted as an integral part of the learning process, provided that the final output reflects a significant contribution from the student in terms of analysis and personal reflection. Students must clearly identify which parts have been generated using this technology, specify the tools used, and include a critical reflection on how these have influenced both the process and the final outcome of the activity. Failure to ensure transparency in the use of AI will be considered a breach of academic integrity and may result in a penalty on the assignment grade, or more severe sanctions in serious cases.

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

Continuous assessment activities

Title	Weight	Hours	ECTS	Learning outcomes
Control I	25%	2	0.08	1, 2, 5, 7, 9, 10, 11, 14, 15, 17, 21
Self learning activities	20%	0	0	3, 4, 7, 8, 9, 10, 11, 14, 16, 17, 19, 20, 21
Control II	25%	2	0.08	1, 2, 3, 5, 6, 7, 9, 10, 11, 12, 13, 14, 15, 16, 17, 19, 22, 23, 25
Lab Practicals and attending visits	30%	0	0	1, 2, 3, 4, 5, 6, 7, 9, 10, 11, 12, 14, 17, 18, 20, 21, 23, 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: attendance at visits and talks, as well as the submission and evaluation of the practical session reports, will account for 30% of the final grade.

A student will be considered non-assessable if they have participated in assessment activities representing $\leq 15\%$ of the final grade.

To pass the subject, it is requested:

To pass the course, the following is required:

- a) A minimum grade of 5 out of 10 in each of the two tests; if this requirement is not met, the student must take the resit examination.
- b) A minimum grade of 5 out of 10 in the self-learning activities.
- c) Attendance of at least 80% of practical sessions, visits, and lectures.

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.

Bibliography

BIBLIOGRAFIA (llibres disponibles a la biblioteca)

1. Ahmed F.E (1991) Sea Food Safety. Institute of Medicine. Nat. Academy Press, Washington
2. Alasalvar C. i Taylor T. (2002) Seafoods - Quality, technology and nutraceutical applications. Ed. Springer
3. Alegre M., J. Lleó i J. Veny (1992) Espècies pesqueres d'interès comercial. Nomenclatura oficial catalana. Ed. Generalitat de Catalunya, Dept. Cultura, Dept. Agricultura, Ramaderia i Pesca, Barcelona.
4. Bremner H.A. (2002) Safety and quality issues in fish processing. CRC Press .
5. Dore I. (1992) Seafood scams and frauds and how to protect yourself! Urner Barry Publications
6. Footitt, R. J. i Lewis, A. S. (1999) Enlatado de pescado y carne. Zaragoza, Editorial Acribia,
7. Hall G.M. (2001) Tecnología del procesado del pescado. Ed. Acribia, SA
8. Huss H.H. (1998) El pescado fresco: su calidad y cambios de calidad. Doc. Técnico de Pesca nº 348, FAO, Roma.
9. Huss H.H. (1994) Assurance of seafood quality. FAO Fisheries Technical paper nº 334, FAO, Roma
10. International Institute of Refrigeration (1997) Methods to determine the freshness of fish in research and industry: evaluation of fish freshness IIR, Paris
11. Lanier T.C. i C. Lee (Eds.) (1992) Surimi technology. Ed. Marcel Dekker, Nueva York.
12. Love R.M. (1988) The food fishes: their intrinsic variation and practical implications. Ed. Avi Book
13. Luten J.B. [et al.] (2003) Quality of fish from catch to consumer: labelling, monitoring and traceability. Wageningen Academic Publisher
14. Lloris, D. ; Meseguer, S. (2002) Recursos marins del mediterrani: fauna i flora del mar. Barcelona : Entidad autónoma del diario oficial y de publicaciones,
15. Martin R.E. i G.J. Flick (Eds.) (1990) The seafood industry. Ed. V. Nostrand Reinhold, N. York.
16. Martin A.M. (1994) Fisheries processing. Ed. Chapman and Hall
17. Martin R.E., Carter E.P., Flick GJ, Jr., Davis L.M. (2000) Marine & freshwater Products Handbook. Technomic pub.
18. Park J.W (2005) Surimi and surimi seafood Marcel and Dekker, 2nd edition
19. Pearson A.M. i T.R. Dutson (1995) Quality attributes and their measurement in meat, poultry and fish products. Kluwer Academic Publishers,
20. Pearson A.M. i Dutson T.R. (1999) Haccp in meat, poultry, and fish processing. CRC press
21. Pigott G.M. i B.W. Tucker (1990) Seafood: effects of technology on nutrition. Ed. Marcel Dekker, Nueva York.
22. Shamidi F., Jones Y. i Kitts, D.D. (1997) Seafood safety processing, and biotechnology. Ed. Technomic

- Pub. Lancaster, USA.
23. Sielaff H. (2000) Tecnología de la fabricación de conservas. Editorial Acribia
 24. Regenstein J.M. i C.E. Regenstein (1991) Introduction to fish technology. Ed. Van Nostrand Reinhold, Nueva York.
 25. Ruiter A. (1999) El pescado y los productos derivados de la pesca: composición, propiedades nutritivas y estabilidad. Ed. Acribia, SA.
 26. Sumner, J. (2004). Application of risk assessment in the fish industry (FAO fisheries technical paper) Roma: food & agriculture organization of the united nations
 27. Ward D.R. i C.R. Hackney (Eds.) (1991) Microbiology of marine food products. Ed. Van Nostrand Reinhold, Nueva York.
 28. Wheaton F.W. i T.B. Lawson (1985) Processing aquatic food products. Ed. John Wiley & Sons, Nueva York.

BIBLIOGRAFIA (llibres disponibles online)

- [El estado mundial de la pesca y la acuicultura 2020 FAO](#)
- [El Pescado Fresco: Su Calidad y Cambios de su Calidad - 1999 FAO](#)
- [Ice in fisheries 1992 FAO](#)
- [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 and Safety](#)
- 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 aquicultura](#)

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

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

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

Software

Don't apply

Course groups and languages

The information provided is provisional until November 30. After this date, you will be able to consult the language of each group through this [link](#). To access the information, you will need to enter the course CODE

Type of teaching	Group	Language	Semester	Shift
(TE) Theory	1	Catalan	first semester	morning-mixed
(PAUL) Classroom practices	1	Catalan	first semester	morning-mixed

(PLAB) Practical laboratories	1	Catalan	first semester	morning-mixed
(PPP) Pràctiques en planta pilot de tecnologia dels aliments	1	Catalan	first semester	morning-mixed
(VEXT) Visites externes a entitats	1	Catalan	first semester	morning-mixed
(PLAB) Practical laboratories	2	Catalan	first semester	morning-mixed
(PPP) Pràctiques en planta pilot de tecnologia dels aliments	2	Catalan	first semester	morning-mixed
(VEXT) Visites externes a entitats	2	Catalan	first semester	morning-mixed
(PPP) Pràctiques en planta pilot de tecnologia dels aliments	3	Catalan	first semester	morning-mixed