Information about the subject

Degree: Bachelor of Degree in Marine Sciences

Faculty: Faculty of Veterinary Medicine and Experimental Sciences

Code: 270208 **Name:** Sea Food Technology

Credits: 6,00 **ECTS Year:** 2, 3, 4 **Semester:** 1

Module: Optional Itinerary: Marine Biotechnology

Subject Matter: Sea Food Technology **Type:** Elective

Department: Oceanography and Environment

Type of learning: Classroom-based learning

Languages in which it is taught: Spanish

Lecturer/-s:

Module organization

Optional Itinerary: Marine Biotechnology

Subject Matter	ECTS	Subject	ECTS	Year/semester
Marine Biotechnology	6,00	Marine Biotechnology	6,00	2, 3, 4/1
Instrumental Techniques	6,00	Instrumental techniques	6,00	This elective is not offered in the academic year 24/25
Sea Food Technology	6,00	Sea Food Technology	6,00	2, 3, 4/1
Genetic Engineering	6,00	Gene Techniques	6,00	This elective is not offered in the academic year 24/25
Food Technology	6,00	Food Technology II	6,00	This elective is not offered in the academic year 24/25
Food Hygiene and Safety	6,00	Food Hygiene and Safety	6,00	This elective is not offered in the academic year 24/25

Recommended knowledge

No specifc prior knowledge is required

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 identifies the main seafoods and knows how and where they are produced.

R2 The student knows the composition of seafood and the biochemical and microbial changes subsequent to its capture.

R3 The student knows and applies the fundamentals of food engineering to the design and operation of processing facilities.

R4 The student recognizes the environmental and socio-economic implications of the agri-food processing industry for fishery and aquaculture products.

R5 The student develops HACCP plans for seafood processing and distribution facilities.

R6 The student evaluates the quality and food safety of seafood products through various procedures.

R7 The student prepares reports and makes valid judgements on various aspects of the study of seafood production technology.

R8 The student relates the theoretical and practical contents through works and tasks entrusted.

R9 The student understands conceptually and values the importance of studying the technology of seafood production in the context of science and society today, and of oceanography in particular.

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	Students are able to apply knowledge to their work in a professional way and have the competences enabling them to state and defend views and opinions as well as perform problem-solving tasks in their field of study.				x
CB3	Students are able to collect and interpret relevant data (generally in their field of study) and give opinions that involve reflection on relevant social, scientific or ethical issues.			x	
CB5	Students develop the necessary learning skills to undertake further studies with a high level of autonomy.				x

GENERAL		Weighting			
		1	2	3	4
CG1	Capacity to analyze and synthesize				x
CG2	Capacity to organize and plan				x
CG3	Mastering Spanish oral and written communication				x
CG5	Knowing and applying Basic ITC skills related to marine science			x	
CG6	Capacity to manage information (capacity to look for and analyze information coming from different types of sources)				x
CG7	Decision making				x
CG8	Capacity to work in interdisciplinary and multidisciplinary team				x
CG10	Critical and self-critical capacity				x

CG11	Capacity to learn				x
CG12	Capacity to adapt to new situations				x
CG16	Capacity to apply theoretical knowledge				x
CG17	Research skills		x		
CG18	Sensibility to environmental issues.			x	

SPECIFIC		Weighting			
		1	2	3	4
CE8	Identifying and analyzing new problems and proposing solution strategies				x
CE10	Knowing how to use planning, designing and implementing research tools while surveying and assessing results		x		
CE11	Knowing how to do fieldwork and laboratory experiments in a safe and responsible way, promoting teamwork		x		
CE13	Looking for and assessing different kinds of marine resources				x
CE19	Deeply understanding operating systems of maritime orientated companies, identifying their problems and proposing solutions				x

Assessment system for the acquisition of competencies and grading system

Assessed learning outcomes	Granted percentage	Assessment method
	50,00%	Written test with theoretical and practical questions
	30,00%	Delivery of guided assignments, whose objectives and contents will be proposed by the teacher
	10,00%	Laboratory test
	10,00%	Oral presentation

Observations

According to the general evaluation and qualification regulations, the preferred evaluation system will be by means of continuous evaluation. Specifically:
In the subject, various continuous evaluation activities are carried out that may or may not be evaluable. All of them will be essential to pass the subject:
- HACCP Activity
- Activity tagging
- Flowchart
- Visit to a food fair, from which the final work will be carried out

The written test will consist of a multiple choice test, only one of the answers is true (wrong answers will subtract) and short questions that will include both aspects seen in class, as well as possible seminars and visits.
The different works, whose objectives and contents will be proposed by the teacher will consist of a serie of group or individual work activities and rapid classroom tests that will be developed throughout the practical classroom classes that are carried out. Recovery will only be allowed in case of excused absence to class, otherwise it will count as not delivered and will be 0 in it.
The practical laboratory test will be carried out in the laboratory or in the classroom after fnishing it. Not going to de practice session proposal will prevent the student from doing the exam. Within this assessment, the student's attitude in the laboratory will also be taken intoaccount. If it were suspended it would be recovered in the second examination session.
Classroom practical classes have no possibility of recovery in exams. In the group work exhibition, the content of the presentation and the exhibition will be assessed both individually and collectively.

MENTION OF DISTINCTION:
In accordance with the regulations governing the assessment and grading of subjects in force at UCV, the distinction of "Matrícula de Honor" (Honours with Distinction) may be awarded to students who have achieved a grade of 9.0 or higher. The number of "Matrículas de Honor" (Honours with Distinction) may not exceed five percent of the students enrolled in the group for the corresponding academic year, unless the number of enrolled students is fewer than 20, in which case a single "Matrícula de Honor" (Honours with 9 Distinction) may be awarded. Exceptionally, these distinctions may be assigned globally across different groups of the same subject. Nevertheless, the total number of distinctions awarded will be the same as if they were assigned by group, but they may be distributed among all students based on a common criterion, regardless of the group to which they belong. The criteria for awarding "Matrícula de Honor" (Honours with Distinction) will be determined according to the guidelines stipulated by the professor responsible for the course, as detailed in the "Observations" section of the evaluation system in the course guide.

Learning activities

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

M1	Teacher presentation of contents, analysis of competences, explanation and in-class display of skills, abilities and knowledge.
M2	Group work sessions supervised by the professor. Case studies, diagnostic tests, problems, field work, computer room, visits, data search, libraries, on-line, Internet, etc. Meaningful construction of knowledge through interaction and student activity.
M3	Activities carried out in spaces with specialized equipment.
M4	Supervised monographic sessions with shared participation.
M5	Application of multidisciplinary knowledge.
M6	Personalized and small group attention. Period of instruction and/or guidance carried out by a tutor to review and discuss materials and topics presented in classes, seminars, readings, papers, etc.
M8	Set of oral and/or written tests used in initial, formative or additive assessment of the student.
M9	Group preparation of readings, essays, problem-solving, seminars, papers, reports, etc. to be presented or submitted in theoretical , practical and/or small-group tutoring sessions. Work done on the university e-learning platform (www.plataforma.ucv.es)

M10 Student's study: Individual preparation of readings, essays, problem-solving, seminars, papers, reports, etc. to be presented or submitted in theoretical, practical and/or small-group tutoring sessions. Work done on the university e-learning platform (www.plataforma.ucv.es).

IN-CLASS LEARNING ACTIVITIES

	LEARNING OUTCOMES	HOURS	ECTS
ON-CAMPUS CLASS M1	R1, R2, R3, R4, R6, R9	30,00	1,20
PRACTICAL CLASSES M2	R2, R3, R5, R6, R7, R8	10,00	0,40
LABORATORY M3	R2, R6, R8	10,00	0,40
SEMINAR M4	R9	3,00	0,12
GROUP PRESENTATION OF ASSIGNMENTS M5	R2, R3, R4, R6, R8	2,00	0,08
TUTORIAL M6	R1, R2, R3, R4, R5, R6, R7, R8, R9	3,00	0,12
ASSESSMENT M8	R1, R2, R3, R4, R5, R6, R7, R8, R9	2,00	0,08
TOTAL		**60,00**	**2,40**

LEARNING ACTIVITIES OF AUTONOMOUS WORK

	LEARNING OUTCOMES	HOURS	ECTS
GROUP WORK M9	R1, R2, R3, R4, R6, R7, R8, R9	20,00	0,80
INDEPENDENT WORK M10	R1, R2, R3, R4, R5, R6, R7, R8, R9	70,00	2,80
TOTAL		**90,00**	**3,60**

Description of the contents

Description of the necessary contents to acquire the learning outcomes.

Theoretical contents:

Content block	Contents
I.- INTRODUCTION: FOOD TECHNOLOGY OF MARINE ORIGIN. LEGISLATION AND FOOD SECURITY	Unit 1. Food technology. Live marine resources that can be used as food. Production techniques: extractive fshing and aquaculture. Industries derived from fshing Unit 2 Legislation related to the marine food industry Unit 3 Food security in foos of marine origin: design of HACCP plans. Unit 4. Chemical and nutritional properties of foods of marine origin. Post-capture and sacrifce manipulation, biochemistry and microbiology.
II.- PROCESSING TECHNOLOGY OF MARINE ORIGIN FOODS.	Unit 5. Basic concepts of food technology. Final consumer, requirements of processed foods. Sensory evaluation of marine foods Unit 6. Introduction to the forms of conservation and presentation to consumption. Labeled Unit 7. Main techniques of food analysis: nutritional composition (determination of humidity, ashes, proteins, fat) and food safety (microbiological analysis) Unit 8. Conservation techniques by cold: fresh, chilled and frozen foods. Unit 9. Conservation techniques through salting and drying. Unit 10. Conservation techniques through smoking. Unit 11. Conservation techniques through heat treatments: pasteurization, sterilization. Preparation of semi-preserves and preserves Unit 12. Development of products based on fsh muscle. Precooked and cooked foods. By-products Topic 13. Biotechnology applied to the food industry

Organization of the practical activities:

	Content	Place	Hours
PR1.	SAnalysis of water retention capacity (CRA), moisture, ash and protein	Laboratory	2,00
PR2.	Sensory analysis	Laboratory	2,00
PR3.	Determination of fat percentage and enzymatic browning. Part I	Laboratory	2,00
PR4.	Determination of fat percentage and enzymatic browning. Part II	Laboratory	2,00
PR5.	Development of a product of marine origin	Laboratory	2,00

Temporary organization of learning:

Block of content	Number of sessions	Hours
I.- INTRODUCTION: FOOD TECHNOLOGY OF MARINE ORIGIN. LEGISLATION AND FOOD SECURITY	7,00	14,00
II.- PROCESSING TECHNOLOGY OF MARINE ORIGIN FOODS.	23,00	46,00

References

BIBLIOGRAPHY:ALASALVAR C. 2011. Handbook of seafood quality, safety and health applications. WILEY-BLACKWELL.BENITEZ M. 2013. Tecnología del pescado. IC.BONET M. 2013. Elaboración de congelados de productos de la pesca. IC.CAMPOS R. 2013. Acondicionado del pescado y marisco. IC.CANOURA J. 2013. Elaboración de masas, pastas, precocinados y cocinados de pescado. ICEVANS, JUDITH A. 2018. Ciencia y Tecnología de los alimentos congelados. ACRIBIA FELLOWS, PETER. 2018. Tecnología del procesado de los alimentos: principios y práctica. ACRIBIAHAARD N. 2000. Seafood enzymes. CRC PRESS.HALL G. 2001. Tecnología del procesado del pescado. ACRIBIAHALL G. 2011. Fish processing: sustainability and new opportunities. WILEY-BLACKWELL. HORST-DIETER T. 2001. Fundamentos de la tecnología de los alimentos. ACRIBIA LUTEN J.B. 2003. Quality of fish from catch to consumer. WANENINGEN.LUTEN J.B. 2006. Seafood research from fish to dish. WANENINGEN.MADRID A., MADRID JM., MADRID R. 1993. Tecnología del pescado y productos derivados. MUNDIPRENSA.MARQUEZ A. 2013. Recepción, almacenaje, y expedición de productos de la pesca. IC. MATEOS-APARICIO, I. 2017. Aditivos alimentarios. DEXTRAMORCILLO, G., CORTÉS, E., GARCÍA, J. 2013. Biotecnología y alimentación. UNED NOLLET L. 2010. Handbook of seafood and seafood product analysis. CRC PRESS, NOLLET L. 2000. Food analysis by HPLC. CRC PRESS.SANTANA I.M. 2013. Elaboración de conservas de pescado y marisco. IC.SEN D.P. 2005. Advances in fish processing technology. ALLIED PUBLISHERS SHAHIDI F. 2004. Seafood quality and safety. SCIENCE TECH PUBLISHING. SHAHIDI F. 2006. Maximizing the value of marine by-products. WOODHEAD VV.AA. 2006. APPCC aplicado a la comercialización de la pesca. IDEAS PROPIAS. WEBS OF INTEREST:AESAN: http://www.aecosan.msssi.gob.es/AECOSAN/web/home/aecosan_inicio.htm FAO: http://www.fao.org/home/en/OMS: https://www.who.int/esEFSA: https://www.efsa.europa.eu/enANFACO-CECOPESCA: http://www.anfaco.es/es/index.php MAPA: https://www.mapa.gob.es/es/pesca/temas/default.aspx