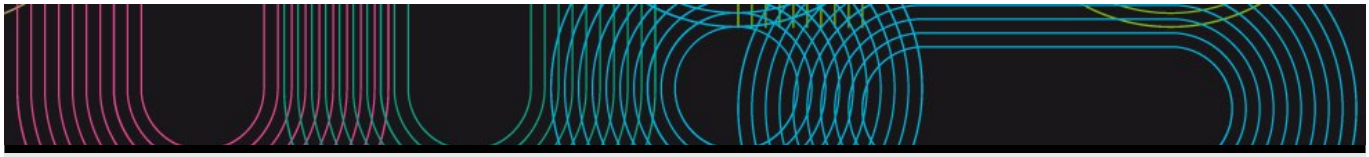

IDENTIFYING DATA				
Physical and Chemical Treatments				
Subject	Physical and Chemical Treatments			
Code	V11M085V02301			
Study programme	Máster Universitario en Ciencia y Tecnología de Conservación de Productos de la Pesca			
Descriptors	ECTS Credits	Choose	Year	Quadmester
	3	Mandatory	1st	2nd
Teaching language	Spanish Galician			
Department				
Coordinator	Longo González, María Asunción			
Lecturers				
E-mail				
Web	http://webs.uvigo.es/pesca_master/			
General description	In this course, the different physical and chemical procedures used to prolong the useful life of fishery and aquaculture products are addressed, starting with the more traditional methods, to the more innovative ones. It will focus on the use of traditional methods that have been superseded from a technological point of view but which are organoleptically important and offer diversification for the consumer and, at the other extreme, the use of advanced technologies to supply products and lengthen the useful life and considerations necessary to choose the appropriate packaging depending on the type of food, technological process and storage conditions.			

Training and Learning Results	
Code	
A1	Possess and understand knowledge that provides a basis or opportunity to be original in the development and / or application of ideas, often in a research context.
A3	That students are able to integrate knowledge and face the complexity of making judgments based on information that, being incomplete or limited, includes reflections on social and ethical responsibilities linked to the application of their knowledge and judgments.
A5	That students have the learning skills that allow them to continue studying in a way that will be largely self-directed or autonomous.
B1	That the students acquire the comprehension, analysis and synthesis capacities.
B4	That the students develop the problem-solving abilities of application of the theoretical knowledge in practice.
C8	Study the different forms of preparation and packaging systems for sea products treated by cold, heat or other methods, both traditionally and new technological orientations: restructured products, prepared dishes, modified atmospheres, high pressures, etc.
C9	Understand the organization of production in the industry of fishery and aquaculture products treated by cold, heat and other processes. Production methods and their logistics.
C10	Determine the criteria and procedures for the control of the quality of the products of the fishing and of the containers and packaging used in its commercial circuit. Know the procedures for its analytical control and defect detection.
D1	Ability to understand the meaning and application of the gender perspective in the different fields of knowledge and professional practice with the aim of achieving a more just and egalitarian society.
D2	Sustainability and environmental commitment. Equitable, responsible and efficient use of resources.
D5	Commitment to ethics in the profession and in society.

Expected results from this subject	
Expected results from this subject	Training and Learning Results

To know the processes involved in the production of semi-preserved products at an industrial level.	A1 A3 B1 B4 C8 C9 D1 D2
That the students know the manufacturing techniques of smoked products and the technological variables.	A1 A5 B4 C9 C10 D1 D5
Acquire knowledge about packaging and its types, for this range of products. Know the process of closing the products.	A3 A5 B1 B4 C8 C9 C10 D1 D2
That the students know the biotechnological methods of conservation of fishery products.	A1 B1 B4 C8 C9 C10 D2 D5
To understand the different aspects and the importance of traditional treatments in this range of products. To understand production methods and logistics	A3 A5 B4 C8 C9 C10 D2 D5

Contents	
Topic	
1. General considerations on manufacturing processes of semi-preserves.	- Process of production of anchovy in salting and fillets of anchovy, codfish in salting, etc.
2. Manufacture of smoked products. Technological variables.	- Production of smoked salmon, herring, etc. - Technological variables of the process and their incidence in the characteristics of the final product. - Controls applicable in industrial processing.
3. Specific packaging processes.	- Packaging in modified atmospheres and controlled atmospheres. - Additives and technological adjuvants, bacteriocins. - Novel procedures: high pressures, electrical pulses, microwave, ohmic heating. - Active and intelligent packaging.
4. Biotechnological methods of conservation of fishery products.	- Bioconservation. Protective cultures. Bacteriocins. Probiotics. - Other methods for natural conservation of fish products: essential oils, spices, other additives. - Production of additives for fishing industries. - Trends in Functional Foods.

Planning			
	Class hours	Hours outside the classroom	Total hours
Lecturing	14	35	49
Case studies	4	8	12
Studies excursion	2	4	6
Seminars	2	2	4

Objective questions exam	1	1	2
Self-assessment	1	1	2

*The information in the planning table is for guidance only and does not take into account the heterogeneity of the students.

Methodologies

	Description
Lecturing	Explanation by the lecturer of the contents of the course, theoretical bases and exercises to be developed by the student. Blackboard and audiovisual means will be used.
Case studies	Resolution of cases, doubts and queries both individually or in a small group regarding the follow-up and study of the course contents.
Studies excursion	Activities of application of knowledge to specific situations and acquisition of basic and procedural skills related to the subject matter of study. They take place in non-academic outdoor spaces. These include field practices, visits to events, research centers, companies, institutions, etc.
Seminars	Personalized and/or group tutorials: student interviews with the course's teaching staff for advice / development of activities of the learning process.

Personalized assistance

Methodologies	Description
Lecturing	The lecturers will answer the questions posed by the students, in face-to-face or online tutorials, or by email.
Seminars	The student receives, in group and/or individually, advice from the teacher on the theoretical and practical concepts of the subject, for the development of the objectives of the course.
Studies excursion	Guidance and advice in a small group by the teacher on the concepts of field practices, company visits, etc.
Case studies	The student will be guided in the acquisition of basic skills and problem solving related to the subject matter of study. The progress of the student will be monitored.

Assessment

	Description	Qualification	Training and Learning Results			
Lecturing	The attendance and participation of the students in the classes, in the discussion of contents and exercises, will be evaluated.	20	A1 A3	B1	C8 C9 C10	D1 D2 D5
Case studies	Problem solving and practical cases will be evaluated, as well as the student's autonomous work.	20	A1 A3 A5	B1 B4	C8 C9 C10	D1 D2 D5
Objective questions exam	There will be an exam with multiple choice questions that will evaluate the theoretical and practical knowledge acquired in the course.	40	A1 A3	B1 B4	C8 C9 C10	D2 D5
Self-assessment	Test-type questionnaires will be carried out through the teaching platform, so that students can evaluate their degree of acquisition of the subject's competences.	20	A1 A3	B1 B4	C8 C9 C10	D2 D5

Other comments on the Evaluation

To pass the course, the student must obtain a grade equal to or greater than 4.5 points out of 10 in the final exam. In case of not reaching this grade, a "Fail" grade will be assigned, with the numerical value of the grade obtained in the final exam.

Sources of information

Basic Bibliography

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Complementary Bibliography

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S. Arlindo, P. Calo, C. Franco, M. Prado, A. Cepeda and J. Barros-Velázquez, **Single nucleotide polymorphism analysis of the enterocin P structural gene in Enterococcus faecium strains isolated from nonfermented animal foods**, Molecular Nutrition and Food Research,

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Recommendations

Other comments

In case of discrepancies, the Spanish version of this guide will prevail.