(*)Facultade de Química

Presentation

The studies of Chemistry have a large tradition at the University of Vigo, where it has been taught during more than 30 years. The stablisment of the Universitary System of Galicia in the 90s and the current process of implantation of the European Space of Higher Education (EEES) modified the offer of degrees, but no the pioneering spirit of the chemists in research of in the quest for a better service to the society.

Degrees given in the Faculty

Degree in Chemistry

- Masters And Doctorates:
  - Industry and Chemical Research and Industrial Chemistry
  - Theoretical chemistry and Computational Modelling
- Master:
  - Science and Technology of Conservation of Fishing Products

Web page

Information about the Faculty of Chemistry:

http://quimica.uvigo.es

Máster Universitario en Ciencia y Tecnología de Conservación de Productos de la Pesca

Subjects

Year 2nd

Code	Name	Quadmester	Total Cr.
V11M085V02303	Quality of fishery and aquaculture products	1st	5
V11M085V02304	Food security of fishery and aquaculture products	1st	5
V11M085V02405	Internships	2nd	9
V11M085V02406	Final Dissertation	2nd	10

IDENTIFYING DATA				
Quality of fishery and aquaculture products				
Subject	Quality of fishery and aquaculture products			
Code	V11M085V02303			
Study programme	Máster Universitario en Ciencia y Tecnología de Conservación de Productos de la Pesca			
Descriptors	ECTS Credits	Choose	Year	Quadmester
	5	Mandatory	2nd	1st
Teaching language	Spanish Galician			
Department				
Coordinator	Longo González, María Asunción			
Lecturers	Barros Velázquez, Jorge García Cabado, Ana Goicoechea Lamas, Irene Longo González, María Asunción Losada Iglesias, Vanesa Quintela Porro, María Corina			
E-mail	mlongo@uvigo.es			
Web	http://pesca_master.webs.uvigo.es			
General description	In this subject the modifications of the organoleptic characteristics that occur after the capture of the fish and the effects of refrixeration and confection on the loss of freshness of the fishing products, as well as the freshness determination methods that exist. Students will be studied Methods of recognizing food alterations during storage and how to detect the biochemical changes subsequent to the capture and during conservation. The microbiological criteria and procedures to analyze fish quality and related legislation. Even the quick recognition tests will be studied and specific techniques of the alterations of frozen foods and preserved in state frozen.			

Training and Learning Results	
Code	
A2	That students know how to apply the knowledge acquired and their ability to solve problems in new or unfamiliar environments within broader (or multidisciplinary) contexts related to their area of study.
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.
A4	That students know how to communicate their conclusions, and the knowledge and ultimate reasons that sustain them, to specialized and non-specialized audiences in a clear and unambiguous way.
B1	That the students acquire the comprehension, analysis and synthesis capacities.
B2	That students develop oral and written communication skills in the two co-official languages of autonomy (Spanish and Galician).
B3	That the students develop the skills to perform experimental work, handling of material and biological elements and related programs.
C11	Approach to quality control of each of the production lines of fishery products. Basic knowledge of product quality management.
C12	Acquire basic knowledge and interpret the legislation applicable to the facilities where the handling and treatment of fishery products is carried out along the commercial chain: hygiene, labeling, food safety, plant self-control (APPCC), etc.
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.
D3	Autonomous work capacity and decision making.
D5	Commitment to ethics in the profession and in society.

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

Understand the modification of organoleptic characteristics after capture.	A2 B1 B2 C11 C12 D1 D2
Appreciate the effects of refrigeration and freezing on the loss of freshness of the products of fishing.	A3 A4 B1 B2 C11 C12 D1 D2 D5
Know and interpret the methods of determination of freshness.	A2 A3 B2 B3 C11 D1 D5
Know the methods of recognition of food alterations during storage.	A2 A3 B1 B2 C11 C12 D2 D3
Detect biochemical changes subsequent to capture and during conservation.	A2 A3 A4 B2 B3 C11 C12 D2 D3 D5
Know the microbiological criteria and procedures to analyze fish quality and related legislation.	A2 A3 B1 B2 C11 C12 D2 D3 D5
Know the rapid recognition tests and specific techniques of the alterations of frozen foods and preserved in frozen state.	A2 B2 C11 C12 D3 D5
Understand the criteria and procedures for quality control of packaging and for the detection of defects.	A2 B1 B2 C11 C12 D1 D2

Know the quality control of each of the lines of preparation of PPAs.	A3 B2 B3 C11 C12 D1 D3 D5
Manage the regulations related to the technical-legal criteria applicable to the different PPAs.	A3 A4 B3 C11 C12 D1 D2
Acquire the basic knowledge of product quality management.	A2 A3 B1 B2 C11 C12 D2 D3
NewAcquire basic knowledge about inspection of frozen fish. Intrinsic procedures and characteristics.	A2 A4 B2 B3 C11 C12 D3 D5
Know the means, materials and machines necessary for the inspection and distinguish the phases and the main aspects of this process.	A2 A4 B1 B2 C11 C12 D2 D3 D5
Know and interpret the methods of product sampling and evaluation.	A3 A4 B2 B3 C11 C12 D1 D2

Contents	
Topic	
ITEM 1. Basic aspects of quality control of fishery and aquaculture products (PPAs).	-Subsequent organoleptic and biochemical changes capture it. - Effects of refrigeration on loss of freshness. - Modifications of fish constituents during the processing and storage. - Abiotic contaminants.
ITEM 2. Related Microbiological Aspects with the conservation of fish.	-Biotoxins marine. - Legislative advances and alternative methods.
ITEM 3. Physical methods of quality control of fishery products	Rheology of gels for the determination of physical properties: 1) Oscillatory methods (test in tension sweeps and sweep of frequency; 2) Static methods (load-recovery test temperature constant: determination of gel strength, exponent of relaxation and relax time
ITEM 4. Quality control in containers. Defects most common in packaged products.	- Know the methods of recognition of defects. - Know the guidelines for action in the daily practice of the industry.

ITEM 5. Practical Aspects	- Determination of sensory, chemical and microbiological parameters of quality, - Nutritional composition, presence of additives and contaminants.

Planning			
	Class hours	Hours outside the classroom	Total hours
Lecturing	26	56	82
Laboratory practical	10	25	35
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	Exhibition by the teacher of the contents on the subject matter of study, theoretical bases and / or exercise or projects to be developed by the student.
Laboratory practical	Laboratory practical classes: Determination of sensory, chemical and microbiological parameters of quality, composition nutritional, presence of additives, contaminants
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 anwer the questions posed by the students about the contents of the course, in face-to-face or online tutorials, or by e-mail.
Laboratory practical	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.
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.

Assessment						
	Description	Qualification	Training and Learning Results			
Lecturing	The resolution of problems and practical cases, as well as the autonomous work of the student.	20	A2 A3 A4	B1 B2	C11 C12	D1 D2 D3 D5
Laboratory practical	The performance and results of the internships and the completion of the internship report or questionnaire will be evaluated.	20	A2 A3 A4	B1 B2 B3	C11 C12	D1 D2 D3 D5
Objective questions exam	The theoretical knowledge acquired in this course will be evaluated through a test with multiple choice questions.	40	A2 A3 A4	B1 B2	C11 C12	D1 D2 D3 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	A2 A3 A4	B1 B2 B3	C11 C12	D1 D2 D3 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

A. O. A. C., **Official Methods of Analysis (l4th edn). Association of Official Analytical Chemis**, Ariington, 1984

FAO/DANIDA,, **El pescado fresco: su calidad y cambios de calidad**, 1988

FARBER J., DODOS K., **Principles of modified-atmosphere and sous vide product packaging.**, A technopnic Publishing Company Inc,, 1995

HEBARD, D. E., Flick G. J. , Martin R. E., **Occurrence and significance of trimethylamine oxide and its derivates in fish and shellfish. Chemistry and biochemistry of marine food products**, Avi Publishing Co. Conneticut, 1992

GOULD,, **New methods of preservation P., Blackie Academic and Professiona**, 1996

Jae W. Park, **Surimi and surimi sea food**, 2nd edition, 2005

Complementary Bibliography

BEATTY S. A.; N. E. GIBBONS,, **The measurement of spoilage of fish**, 1937

CASTELL, C. H.; B. SMITH Y N. NEAL., **Production of dimethylamine in muscle of several species of gadoid fish during frozen storage, especially in relation to presence of dark muscle**, 1971

CASTELL, C. H.; SMITH B. Y DYER, W. J, **Simultaneous measurements of trimethylamine and diniethyiarnine in fish, and their use for estimating quality of frozen storage gadoid fish**, 1974

Recommendations

Other comments

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

IDENTIFYING DATA				
Food security of fishery and aquaculture products				
Subject	Food security of fishery and aquaculture products			
Code	V11M085V02304			
Study programme	Máster Universitario en Ciencia y Tecnología de Conservación de Productos de la Pesca			
Descriptors	ECTS Credits	Choose	Year	Quadmester
	5	Mandatory	2nd	1st
Teaching language	Spanish Galician			
Department				
Coordinator	Longo González, María Asunción			
Lecturers	Avendaño Garcia, Jose Mª Calvo Iglesias, Juan Fontán Pérez, Noa Longo González, María Asunción Ruiz Blanco, Carlos S. Viñuela Rodríguez, José Ángel			
E-mail	mlongo@uvigo.es			
Web	http://pesca_master.webs.uvigo.es			
General description	In this course, Self-control in the food chain, production control, logistics and assurance, quality management and quality certification will be addressed.			

Training and Learning Results	
Code	
A2	That students know how to apply the knowledge acquired and their ability to solve problems in new or unfamiliar environments within broader (or multidisciplinary) contexts related to their area of study.
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.
C13	Assess the importance of the control and certification of the quality of fishery products as a commercial weapon and with a view to traceability and food safety.
C14	Know the food alert management procedures by the competent authority and those responsible for the food chain
C15	Know the critical variables that determine the viability of a product or novel processes. Use tools to obtain critical information for feasibility.
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
Interpret legislation on the self-control of fishery products, legislation on hygiene, labeling and food safety.	A2 A3 C13 C14 D1 D2

Apply in a practical way the analysis of hazards and critical control points (HACCP), with the peculiarities of each type of process.	A3 A5 B1 B4 C14 C15 D1 D5
Assess the importance of the control and certification of the quality of food products from the sea as a commercial weapon and with a view to traceability and food safety.	A3 A5 B1 B4 C13 C14 C15 D2 D5
Know the management procedures of Food Alerts by the competent authority and those responsible for the food chain.	A2 A3 B1 B4 C13 C14 C15 D2 D5
Actions of the Official Control Laboratories of fishery and aquaculture products (PPAs).	A2 A3 B1 B4 C13 C14 C15 D1 D2 D5

Contents	
Topic	
ITEM 1. Self-control in the chain of feeding.	- Traceability. - HACCP. - Study of deviations. - Aspects of practical implementation
ITEM 2. Container-food interactions.	Aspects of Container-food Interactions
ITEM 3. Standards ESO 9000.	- Application to the processes of elaboration of fishing products. - Critical control points.
ITEM 4. Official control of fishery products from third countries.	Official control of fishery products from third countries.
ITEM 5. Official control laboratories of fishing products	Official control laboratories of fishing products
ITEM 6. Official control of fishery products in the EU.	Official control of fishery products in the EU.

Planning			
	Class hours	Hours outside the classroom	Total hours
Lecturing	28	66	94
Case studies	5	12	17
Studies excursion	3	3	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 lessons of the subject.
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 e-mail.
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.
Studies excursion	Guidance and advice in a small group by the teacher on the concepts of field practices, company visits, etc.
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.

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	A2 A3	B1 B4	C13 C14 C15	D1 D2
Case studies	Problem solving and practical cases will be evaluated, as well as the student's autonomous work	20	A2 A3	B1 B4	C13 C14 C15	D1 D2
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	A3 A5	B4	C13 C14 C15	D1 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	A3 A5	B4	C13 C14 C15	D1 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

FAO, **El Pescado Fresco: su calidad y cambios en su calidad,**,

FAO, **Sistemas de Calidad e Inocuidad de los alimentos. Manual de Capacitación sobre hygiene de los alimentos y sobre el sistema de análsis de Peligros y de Puntos de Control Críticos**,

FAO, **Food safety risk analysis**,

A. Ruiter, **El pescado y los productos derivados de la pesca. Composición, propiedades nutritivas y estabilidad.**, Editorial Acribia,

WHO,, **Training Consideratrions for the Aplication of the Hazard Analysis Critical Control Point System to Food Processing and Manufacturing**,

Gobierno Vasco,, **Estándar de referencia de los sistemas de autocontrol de empresas alimentarias basados en el APPCC/HACCP**,

Complementary Bibliography

Jean-Yves Leveau y Marielle Bouix, **Manual Técnico de Higiene, Limpieza y Desinfección,**,

Ramón Madrid, Juana Mary Madrid, Antonio Madrid, **La limpieza y desinfección en las industrias alimentarias, ILE-Julio-Agosto, 33-38, Roy Kirby., HACCP in practique**,

Roy Kirby.,, **HACCP in practique, Food Control**,

Stumbo, C. R., J.R. Murphy, and J. Cochran, **Nature of Thermal death time curves for P.A. 3679 and Clostridium botulinum**,

Recommendations

Other comments

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

IDENTIFYING DATA				
Internships				
Subject	Internships			
Code	V11M085V02405			
Study programme	Máster Universitario en Ciencia y Tecnología de Conservación de Productos de la Pesca			
Descriptors	ECTS Credits	Choose	Year	Quadmester
	9	Mandatory	2nd	2nd
Teaching language	Spanish Galician			
Department				
Coordinator	Longo González, María Asunción			
Lecturers	Longo González, María Asunción			
E-mail	mlongo@uvigo.es			
Web	http://pesca_master.webs.uvigo.es			
General description	Carry out an internship in a company in the seafood conservation sector, in order to address specific practical tasks that, based on the knowledge acquired, allow them to better understand the productive environment of the Sector in a global context. The student will participate in the activities that are scheduled by the tutor, the Master's coordinator and the company's staff. These activities will be framed within the existing processes in the company itself related to the conservation of fishing products.			

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.
A2	That students know how to apply the knowledge acquired and their ability to solve problems in new or unfamiliar environments within broader (or multidisciplinary) contexts related to their area of study.
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.
A4	That students know how to communicate their conclusions, and the knowledge and ultimate reasons that sustain them, to specialized and non-specialized audiences in a clear and unambiguous way.
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.
B2	That students develop oral and written communication skills in the two co-official languages of autonomy (Spanish and Galician).
B3	That the students develop the skills to perform experimental work, handling of material and biological elements and related programs.
B4	That the students develop the problem-solving abilities of application of the theoretical knowledge in practice.
B5	That the students develop the abilities of teamwork, enriched by the pluridisciplinarity.
B6	That the students develop the ability of elaboration, presentation and defense of works or reports.
C1	Know and differentiate the main fishing and aquaculture species of commercial interest in our country, with its main biological characteristics.
C2	Know the parameters of safety and characterization of the quality of fishery products, as well as their possible toxicological risks, and the legislation applicable to such products.
C3	Acquire basic knowledge about laboratory analytical control of fishery products, including the biotic and abiotic contaminants potentially present in them.
C4	Know the main environmental aspects that affect the processing and conservation of seafood products: control and treatment of liquid effluents, sludge, soil and atmospheric emissions. Applicable legislation.
C5	Acquire the knowledge of business management in industries of the sector.
C6	Acquire knowledge about marketing and marketing for fishery and aquaculture products.
C7	Know the operations and basic technologies used in the conservation and transformation of sea products by cold, heat or other physical-chemical methods: refrigeration, freezing, sterilization, pasteurization, semi-preservation.
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.
C11	Approach to quality control of each of the production lines of fishery products. Basic knowledge of product quality management.
C12	Acquire basic knowledge and interpret the legislation applicable to the facilities where the handling and treatment of fishery products is carried out along the commercial chain: hygiene, labeling, food safety, plant self-control (APPCC), etc.
C13	Assess the importance of the control and certification of the quality of fishery products as a commercial weapon and with a view to traceability and food safety.
C14	Know the food alert management procedures by the competent authority and those responsible for the food chain
C15	Know the critical variables that determine the viability of a product or novel processes. Use tools to obtain critical information for feasibility.
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.
D3	Autonomous work capacity and decision making.
D4	Creativity, initiative and entrepreneurial spirit.
D5	Commitment to ethics in the profession and in society.

Expected results from this subject

Expected results from this subject	Training and Learning Results
Address specific practical tasks that, based on the knowledge acquired, allow a better understanding of the productive environment of the sector in a global context.	A1 A2 A3 A4 A5 B1 B2 B3 B4 B5 B6 C1 C2 C3 C4 C5 C6 C7 C8 C9 C10 C11 C12 C13 C14 C15 D1 D2 D3 D4 D5

Contents

Topic	
External internships in an industry in the canning sector and / or in a research center.	Address specific practical tasks that, based on the knowledge acquired, allow a better understanding of the productive environment of the sector in a global context.

Planning

	Class hours	Hours outside the classroom	Total hours
Practicum, External practices and clinical practices	220	0	220
Seminars	3	0	3
Report of practices, practicum and external practices	2	0	2

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

Methodologies	
	Description
Practicum, External practices and clinical practices	The students will be integrated into an industry in the seafood preservation sector. The students will learn and have an overview of all the modules of the production process of the industry where they carry out the internship. The students will be assigned a task, within the various modules that the production process involves. The activity of the companies with which the collaboration agreements have been reached allows students to acquire competencies in the procedures related to the various processes of conservation, safety, quality and technology, environmental management, marketing and innovation and sustainability.
Seminars	The activity carried out within the industry will be followed by the tutors of the master's degree and by a person in charge of the company appointed to supervise and guide the students in the tasks assigned.

Personalized assistance	
Methodologies	**Description**
Practicum, External practices and clinical practices	Advise students on issues and difficulties that arise during their external internships.
Seminars	An academic responsible person and another from the company will be assigned, to supervise and advise the student's work, and a contact will be maintained with the persons in charge of the Master.

Assessment						
	Description	Qualification	Training and Learning Results			
Practicum, External practices and clinical practices	The activity carried out will be supervised and evaluated by the tutors designated for this purpose (academic and company tutor). The grade for the course will be obtained from the report issued by the tutor in the company on the activity carried out (70% of the total grade) and the internship report that each student must submit at the end of the internship (30% of the total grade).	100	A1 A2 A3 A4 A5	B1 B2 B3 B4 B5 B6	C1 C2 C3 C4 C5 C6 C7 C8 C9 C10 C11 C12 C13 C14 C15	D1 D2 D3 D4 D5

Other comments on the Evaluation

Sources of information

Basic Bibliography

Complementary Bibliography

Recommendations

Other comments

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

IDENTIFYING DATA				
Final Dissertation				
Subject	Final Dissertation			
Code	V11M085V02406			
Study programme	Máster Universitario en Ciencia y Tecnología de Conservación de Productos de la Pesca			
Descriptors	ECTS Credits	Choose	Year	Quadmester
	10	Mandatory	2nd	2nd
Teaching language	Spanish Galician			
Department				
Coordinator	Longo González, María Asunción			
Lecturers	Longo González, María Asunción			
E-mail	mlongo@uvigo.es			
Web	http://pesca_master.webs.uvigo.es			
General description	Development by the students of a work of theoretical and/or experimental content related to the industry of conservation of fishing products. The work will be of an individual nature, supervised by professors of the master's degree and aimed at evaluating the competences associated with it.			

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.
A2	That students know how to apply the knowledge acquired and their ability to solve problems in new or unfamiliar environments within broader (or multidisciplinary) contexts related to their area of study.
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.
A4	That students know how to communicate their conclusions, and the knowledge and ultimate reasons that sustain them, to specialized and non-specialized audiences in a clear and unambiguous way.
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.
B2	That students develop oral and written communication skills in the two co-official languages of autonomy (Spanish and Galician).
B3	That the students develop the skills to perform experimental work, handling of material and biological elements and related programs.
B4	That the students develop the problem-solving abilities of application of the theoretical knowledge in practice.
B5	That the students develop the abilities of teamwork, enriched by the pluridisciplinarity.
B6	That the students develop the ability of elaboration, presentation and defense of works or reports.
C1	Know and differentiate the main fishing and aquaculture species of commercial interest in our country, with its main biological characteristics.
C2	Know the parameters of safety and characterization of the quality of fishery products, as well as their possible toxicological risks, and the legislation applicable to such products.
C3	Acquire basic knowledge about laboratory analytical control of fishery products, including the biotic and abiotic contaminants potentially present in them.
C4	Know the main environmental aspects that affect the processing and conservation of seafood products: control and treatment of liquid effluents, sludge, soil and atmospheric emissions. Applicable legislation.
C5	Acquire the knowledge of business management in industries of the sector.
C6	Acquire knowledge about marketing and marketing for fishery and aquaculture products.
C7	Know the operations and basic technologies used in the conservation and transformation of sea products by cold, heat or other physical-chemical methods: refrigeration, freezing, sterilization, pasteurization, semi-preservation.
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.
C11	Approach to quality control of each of the production lines of fishery products. Basic knowledge of product quality management.

C12	Acquire basic knowledge and interpret the legislation applicable to the facilities where the handling and treatment of fishery products is carried out along the commercial chain: hygiene, labeling, food safety, plant self-control (APPCC), etc.
C13	Assess the importance of the control and certification of the quality of fishery products as a commercial weapon and with a view to traceability and food safety.
C14	Know the food alert management procedures by the competent authority and those responsible for the food chain
C15	Know the critical variables that determine the viability of a product or novel processes. Use tools to obtain critical information for feasibility.
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.
D3	Autonomous work capacity and decision making.
D4	Creativity, initiative and entrepreneurial spirit.
D5	Commitment to ethics in the profession and in society.

Expected results from this subject

Expected results from this subject	Training and Learning Results
Search for detailed information on the selected topic. Consultations and selection of bibliographical sources.	A1 A2 A3 A4 A5 B1 B2 B3 B4 B5 B6 C1 C2 C3 C4 C5 C6 C7 C8 C9 C10 C11 C12 C13 C14 D1 D2 D3 D4 D5

Work development. Laboratory work, theory, pilot plant or information in industries of the sector.	A1 A2 A3 A4 A5 B1 B2 B3 B4 B5 B6 C1 C2 C3 C4 C5 C6 C7 C8 C9 C10 C11 C12 C13 C14 C15 D1 D2 D3 D4 D5
Oral and written presentation of a final report of the work done	A1 A2 A3 A4 A5 B1 B2 B3 B4 B5 B6 C1 C2 C3 C4 C5 C6 C7 C8 C9 C10 C11 C12 C13 C14 C15 D1 D2 D3 D4 D5

Contents
Topic

Elaboration of a Master's Dissertation	- Selection of the topic to be studied. - Search and selection of bibliographical sources - Laboratory work, pilot plant or information in industries of the sector. - Advice with the coordinators of the module or the personnel from industry. - Preparation of reports. - Presentation and defense of the work.

Planning

	Class hours	Hours outside the classroom	Total hours
Project based learning	0	200	200
Presentation	2	8	10
Project	2	38	40

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

Methodologies

	Description
Project based learning	Elaboration of a written document where it is reflected: content of the document, depth of the topic, adequate planning and sequencing, management of bibliographic sources, as well as presentation of results, conclusions and personalized opinions. Ideas of advance and future perspectives of the subject.

Personalized assistance

Methodologies	Description
Project based learning	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.
Tests	**Description**
Project	Guide the student in the writing of the work. elaboration of objectives, results and conclusions.

Assessment

	Description	Qualification	Training and Learning Results			
Presentation	Presentation by the students before an academic jury of the work carried out, individually or in groups.	30	A1 A2 A3 A4 A5	B1 B2 B3 B4 B5 B6	C1 C2 C3 C4 C5 C6 C7 C8 C9 C10 C11 C12 C13 C14 C15	D1 D2 D3 D4 D5
Project	For the evaluation of the work, the content of the written document will be taken into account. Depth of the topic, adequate planning and sequencing, management of adequate bibliographical sources, as well as presentation of results, conclusions and personalized opinions will be assessed. The quality of the project will be evaluated taking into account the evaluation of the jury (50% total qualification) and that of the tutor/s (20% total qualification).	70	A1 A2 A3 A4 A5	B1 B2 B3 B4 B5 B6	C1 C2 C3 C4 C5 C6 C7 C8 C9 C10 C11 C12 C13 C14 C15	D1 D2 D3 D4 D5

Other comments on the Evaluation

Sources of information

Basic Bibliography

Complementary Bibliography

Recommendations

Other comments

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