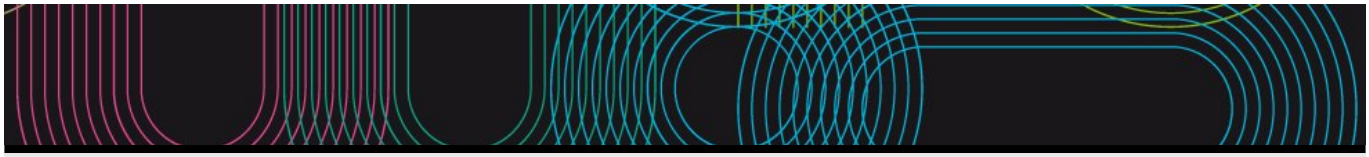

IDENTIFYING DATA				
Conservation by heat: Canned opening and pasteurized				
Subject	Conservation by heat: Canned opening and pasteurized			
Code	V11M085V02206			
Study programme	Máster Universitario en Ciencia y Tecnología de Conservación de Productos de la Pesca			
Descriptors	ECTS Credits	Choose	Year	Quadmester
	5	Mandatory	1st	2nd
Teaching language	Spanish Galician			
Department				
Coordinator	Longo González, María Asunción			
Lecturers				
E-mail				
Web	http://http://webs.uvigo.es/pesca_master/			
General description	In this course, the methodologies for applying heat treatments as a means of preserving fishery and aquaculture products are studied, as well as their effect on said products and their influence on the extension of their useful life. For this, the theoretical foundations of these processes are analyzed, mainly pasteurization and sterilization, and the various techniques and equipment used during the processing of fishery products are studied, both theoretically and through practical work on the elaboration of various products in a pilot plant. . Laboratory quality control of the different raw materials used (fish, sauces, packaging...) and the final products obtained are addressed.			

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.
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.
B5	That the students develop the abilities of teamwork, enriched by the pluridisciplinarity.
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.
D3	Autonomous work capacity and decision making.

D4 Creativity, initiative and entrepreneurial spirit.

Expected results from this subject	
Expected results from this subject	Training and Learning Results
That the students acquire knowledge about the phases in the elaboration of canned fish and other canned products.	A1 A3 B1 B3 C8 C9 C10 D1 D3
That students know the properties and packaging materials: heat sealing and closure control.	A3 A4 B1 B2 B5 C8 C9 C10 D1 D3
That the students know the equipment, management and control of autoclaves and the sterilization and pasteurization systems of packaged products.	A3 A4 B2 B5 C8 C9 C10 D1 D4
That the students know experimental methods for the determination of sterilization and pasteurization tables.	A1 A4 B1 B2 C8 C9 C10 D3 D4
That students know the efficient management of production, production times and energy savings of the plant.	A1 A3 B1 B3 B5 C8 C9 C10 D3 D4

Contents	
Topic	
1. Phases in the preparation of canned fish and other canned products (prepared dishes).	(*)*
2. Properties and packaging materials.	(*)*
3. Definition and formation of the seam and heat sealing. Control of closings.	(*)*
4. Equipment, management and control of autoclaves and pasteurisers.	(*)
5. Sterilization and pasteurization systems for packaged products.	(*)
6. Experimental methods for the determination of sterilization and pasteurization tables.	(*)

7. Theoretical foundations of the sterilization and pasteurization process.	(*)
8. Production and time management and correct design of the Factory Layout.	(*)
9. Principles of economy of movements. Bimanual diagrams.	(*)
10. Efficient management, energy and input savings.	(*)

Planning

	Class hours	Hours outside the classroom	Total hours
Lecturing	26	65	91
Laboratory practical	10	16	26
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.
Laboratory practical	Activities of application of knowledge to specific situations and acquisition of basic and procedural skills related to the subject matter of study. They are developed in special spaces with specialized equipment (laboratories, pilot plant, 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.
Laboratory practical	Advice, in a small group, by the teacher on the theoretical and practical concepts of the laboratory practices of the subject.
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	A1 A3	B1 B2	C8 C9 C10	D1 D4
Laboratory practical	The performance and results of the practices and the completion of the practice report or questionnaire.	20	A3 A4	B2 B3 B5	C8 C9 C10	D3 D4
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 A4	B1 B3 B5	C8 C9 C10	D1 D4
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 A4	B1 B3 B5	C8 C9 C10	D1 D4

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

Elaborador de conservas de productos de la pesca, Ideas Propias Editorial, Vigo,

 FAO/WHO, CAC/RCP 23-1979, **Recommended International Code of Hygienic Practice for Low-Acid and Acidified Low-Acid Canned Foods, in CODEX ALIMENTARIUS**, FAO Information Division - Food And Agriculture Organization of the United Nations & World H,

 May N.S., **Analysis of Temperature Distribution and Heat Penetration Data for In-Container Sterilisation Processes.**, Campden & Chorleywood Food Research Association, Chippping Campden.,

 Richardson P, **Thermal Technologies in Food Processing.**, Woodhead Publishing Limited and CRC Press LLC, Cambridge, England,

 Brennan, J.G., **Manual del procesado de los alimentos**, Editorial Acribia S.A., Zaragoza, España.,

Complementary Bibliography

Xunta de Galicia, **Estudo de Optimización Enerǵetica no Sector Conserveiro en Galicia**, Inega (Instituto Energético de Galicia),

 Darian Warne, **Manual of Fish Canning**, FAO Fisheries Technical Paper 285,

 May N. And Archer, J., **Heat processing in low acid foods: an approach for selection of Fo requirements.**, Campden & Chorleywood Food Research Association, Chippping Campden,

 Secretaría de Estado de Comercio Dirección General de Comercio Exterior, **Cierres y defectos de envases metálicos para productos alimenticios**, PROAGRAF, S.A,

 Canadian Food Inspection Agency, **Metal Can Defect. Identification and Classification Manual**,

 Cheftel, J.-C., Cheftel, H., **Introducción a la bioquímica y tecnología de los alimentos, Vol. I-II.**, Editorial Acribia S.A., Zaragoza, España,

 Holdsworth, S.D., Simpson, R., **Thermal Processing of Packaged Foods.**, Ed. Springer,

 Shafiur Rahman, M., **Handbook of Food Preservation Second Edition**, CRC Press,

Recommendations

Other comments

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