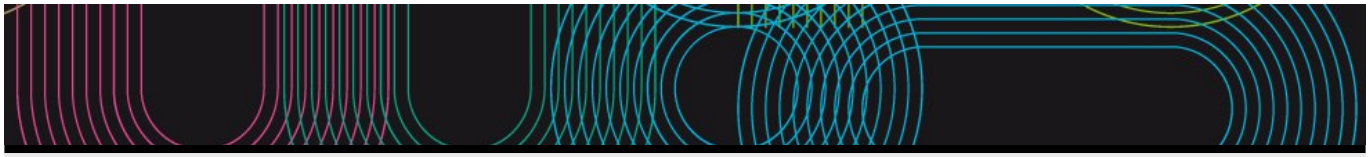

IDENTIFYING DATA				
Food technology				
Subject	Food technology			
Code	O01G041V01502			
Study programme	Grado en Ciencia y Tecnología de los Alimentos			
Descriptors	ECTS Credits	Choose	Year	Quadmester
	6	Mandatory	3rd	1st
Teaching language	Spanish			
Department				
Coordinator	Franco Matilla, María Inmaculada			
Lecturers	Franco Matilla, María Inmaculada Lorenzo Rodríguez, José Manuel			
E-mail	inmatec@uvigo.es			
Web				
General description				

Training and Learning Results	
Code	
A2	Students will be able to apply their knowledge and skills in their professional practice or vocation and they will show they have the required expertise through the construction and discussion of arguments and the resolution of problems within the relevant area of study.
B4	Students will be able to adapt to new situations, become highly creative and have ideas to take up leadership positions.
B5	Students will be able to take the initiative and acquire entrepreneurship skills, with a special focus on improving the quality of life.
C2	To be familiar with the chemistry and biochemistry of food and of its associated technological processes.
C6	To be familiar with the industrial processes linked with the processing and transformation of food.
C12	Ability to make and preserve food.
C14	Ability to control and optimize processes and products.
C16	Ability to manage by-products and residues.
D5	Problem-resolution and decision-making skills.
D8	Critical and self-critical thinking skills.

Expected results from this subject	Training and Learning Results			
*RA1: The student will know the technological processes applied in the industry of the foods, in addition to the treatments and manipulations to that, with general character, subject the foods, well to prolong his useful life or to modify his characteristics and condition them for the consumption.	A2	B4 B5	C2 C6 C12 C14 C16	D5 D8

Contents	
Topic	
INTRODUCTION	Concept and aims. History and evolution of the conservation of the foods. Relations with other sciences.
CAUSAL AGENTS OF THE ALTERATION OF THE FOODS	Classification. Types of alterations that produce. Way to combat them. General methods of conservation.

FOOD PACKAGING	Protection against the physical agents, chemists and biological of deterioration. Characteristics that have to gather the containers. Nature of the materials of the same. Interactions pack-food: technological and sanitary implications. Packaging in atmospheres controlled and modified. Active and intelligent packaging.
CONSERVATION OF THE FOODS BY ACTION OF THE HEAT	Thermal treatment. Cooling. Complementary operations. Calculation of thermal treatments. Assessment of the lethal efficiency of the graphic of warming-cooling.
CONSERVATION OF THE FOODS BY IRRADIATION	Nature of the ionizing radiation. Levels of utilisation. Effects on the organic molecules, microorganisms and enzymes. Units and dosage. Sources of radiation. Plants of radiation. Problems that poses the utilisation of the rionizing radiations. Practical utilisations.
OTHER METHODS OF DESTRUCTION OF MICROORGANISMS And ENZYMES	Thermal methods and no thermal: presurization, electrical pulses, pulses of light, oscillating magnetic fields. Treatments combined.
CONSERVATION OF THE FOODS BY ACTION OF THE COLD	Industrial production of low temperatures. Calculation of the needs of cold for the refrigeration, freezing and storage refrigerator. Systems of refrigeration and freezing of the foods. Thawing. Physical phenomena during the refrigeration and freezing. Calculation of the necessary time for the refrigeration and freezing. Actions of the cold on the microorganisms, the biological structures and the biochemical reactions.
CONSERVATION OF THE FOODS BY REDUCTION OF THE ACTIVITY OF THE WATER	Considerations on the concept of activity of the water. The dehydration. The lyophilisation. Evaporation. Concentration of liquid foods by freezing. The salted and confit.
SMOKED	Composition and properties of the smoke. Systems of production of the smoke.
FERMENTATION AND MADURATION	Generalities. Main foods fermented and/or matured.
CHEMICAL ADDITIVES	Classification. Importance in the alimentary industry. General considerations on his utilisation.
STORAGE And TRANSPORT OF THE FOODS	Storage and legislation of stocks. Protection in front of agents of deterioration during the storage. Conditioning of the foods for the transport.

Planning

	Class hours	Hours outside the classroom	Total hours
Lecturing	28	40	68
Laboratory practical	14	15	29
Seminars	14	22	36
Studies excursion	0	4	4
Mentored work	0	10	10
Objective questions exam	0	3	3

*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 part of the professor of the most important appearances of the contents of the contents of the course, theoretical bases and/or guidelines of a work, exercise or project to develop by the student.
Laboratory practical	Activities in which it will make the direct application of the theoretical knowledges developed in the lecturing sessions. The practices of laboratory will make in person.
Seminars	Activities focused to the work on a specific subject, to the resolution of problems and practical cases that allow to deepen or complement the contents of the matter. They will treat subjects related with the thematic blocks.
Studies excursion	They will make in the measure of the possible visits to alimentary companies.
Mentored work	The student, of individual way, elaborates a document on an appearance or concrete subject of the subject, by what will suppose the research and collected of information, reading and handle of bibliography.

Personalized assistance

Methodologies	Description

Lecturing	It will make a continuous follow-up of the students and will carry out a personalised attention, through the classes, of the resolution of exercises and of the control of the work elaborated. Also, they will be able to assist, if like this they wish it, to the tutorials in group or personalised. The tutorials made in person or by videoconference through the virtual dispatch (previous request) that finds in the Virtual Campus.
Laboratory practical	It will make a continuous follow-up of the students and will carry out a personalised attention in the practices and control of the work elaborated. Also they will be able to assist, if like this they wish it, to the tutorials in group or personalised.
Seminars	It will make a continuous follow-up of the students and will carry out the control of the work elaborated. Also they will be able to assist, if like this they wish it, to the tutorials in group or personalised. The tutorials made in person or by videoconference through the virtual dispatch (previous request) that finds in the Virtual Campus.
Mentored work	It will make a continuous follow-up of the students and will carry out a personalised attention, through the classes, of the resolution of exercises and of the control of the work elaborated. Also, they will be able to assist, if like this they wish it, to the tutorials in group or personalised. The tutorials made in person or by videoconference through the virtual dispatch (previous request) that finds in the Virtual Campus.

Assessment

	Description	Qualification	Training and Learning Results			
Lecturing	It will value the assistance, attitude and participation (5% of the qualification).	5	A2	B4 B5	C2 C6 C12 C14 C16	D5 D8
Laboratory practical	It will evaluate the assistance, the participation and memory presented (quality, depth and presentation). Students will elaborate videos that they will share, evaluate and interact with their classmates.	20	A2	B4 B5	C6 C12 C14	
Seminars	The assistance and participation in seminars will suppose until 10% of the final note, that will include the assistance, attitude, participation and results obtained in the seminars. The results will be evaluated with practical questions that will be carried out during the course. It is necessary to obtain a 5 out of 10.	20			C6 C12 C14	D5 D8
Mentored work	The student, of individual way, elaborates a document on an appearance or concrete subject of the subject, by what will suppose the research and collected of information, reading and handle of bibliography.	15	A2	B4 B5		D5 D8
Objective questions exam	It will make a proof of short answers to evaluate the theoretical knowledges. It is necessary to obtain a minimum of 5 points on 10.	40	A2	B4 B5	C2 C6 C12 C14 C16	D5 D8

Other comments on the Evaluation

The preferred method of assessment is Continuous Assessment. Students who wish to take the Global Assessment (100% of the qualification in the official exam) must communicate this to the person in charge of the subject, by email or through the Moovi platform, within a period of no more than one month from the start of teaching the subject. In the continuous assessment, continuous student attendance and participation will be assessed. Qualification system: this will be expressed by means of a final numerical qualification from 0 to 10 according to current legislation. In order to pass the subject it will be essential to obtain a minimum of 5 points out of 10 in each of the evaluated sections. Practical work is compulsory.

Grading
system: it will be expressed by means of a final numerical grade from 0 to 10
according to current legislation.

In order to
pass the subject it will be essential to obtain a minimum of 5 points out of 10
in the theoretical knowledge and seminars, respectively.

Exam dates:

End of
Degree: 19-09-2023 (16 hours),

1st
Edition: 23-01-2024 (10 hours)

2nd
Edition: 03-07-2024 (16 hours)

End-of-course exams: students who choose to take the end-of-course exam will be assessed only by the exam (which will be worth 100% of the mark). If they do not attend or do not pass the exam, they will be assessed in the same way as the rest of the students.

July: the evaluation will consist of a written exam. The percentage of the mark for the written exam will be 85%. The weight of the practical teaching will be 15%. The student must present the written report of the practical work carried out in the laboratory.

In case of error in the transcription of the exam dates, the valid dates are those officially approved and published on the notice board and on the Centre's website.

The use of any electronic device will not be allowed during the evaluation tests. Doing so will be considered as a reason for failing the subject in the current academic year, and the grade will be 0.0. Ethical commitment: The student must display appropriate ethical behaviour. In the case of unethical behaviour (copying, plagiarism, use of unauthorised electronic equipment...), which prevents the correct development of the teaching activities, it will be considered that the student does not meet the necessary requirements to pass the subject, in which case the grade for the current academic year will be a fail (0.0).

Sources of information

Basic Bibliography

ORDÓÑEZ, J.A., GARCÍA DE FERNANDO, **Tecnologías Alimentarias. Volumen III: Procesos de Transformación**, Síntesis, 2019

CASP, A. & ABRIL, J., **Procesos de conservación de alimentos**, AMV Ediciones, 2003

G. CAMPBELL-PLATT, **Ciencia y tecnología de los alimentos**, Acribia, 2017

FELLOWS, P., **Tecnología del procesado de los alimentos: principios y práctica**, Acribia, 2019

ORDÓÑEZ, J.A., GARCÍA DE FERNANDO, **Tecnologías Alimentarias. Volumen II: Procesos de Conservación**, Síntesis, 2019

JUDITH A. EVANS, **Ciencia y tecnología de los alimentos congelados**, Acribia, 2018

Complementary Bibliography

MADRID, A., GÓMEZ-PASTRANA, J.M. & REFIDOR, F., **Refrigeración, congelación y envasado de los alimentos**, AMV Ediciones, 2010

RICHARDSON, P., **Tecnologías térmicas para el procesado de los alimentos**, Acribia, 2005

Recommendations

Subjects that continue the syllabus

Science and technology of meat products/O01G041V01701
Milk science and technology/O01G041V01704
Science and technology of cereals/O01G041V01903
Science and technology of fish related products/O01G041V01702
Science and technology of vegetal origin products/O01G041V01703