



## 1. General information

**Course:** DAIRY PRODUCTS**Type:** CORE COURSE**Degree:** 383 - UNDERGRADUATE DEGREE PROGRAMME IN FOOD SCIENCE AND TECHNOLOGY**Center:** 1 - FACULTY OF SCIENCE AND CHEMICAL TECHNOLOGY**Year:** 4**Main language:** Spanish**Use of additional languages:****Web site:****Code:** 58327**ECTS credits:** 6**Academic year:** 2023-24**Group(s):** 22**Duration:** First semester**Second language:** English**English Friendly:** Y**Bilingual:** N**Lecturer:** JUSTA MARIA POVEDA COLADO - Group(s): 22

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## 2. Pre-Requisites

The basic knowledge that students must possess, in general, and that will be very useful when taking the subject, can be summarized in the following points:

1. Food microbiology, industrial fermentation, biotechnology
2. Composition of food
3. Physico-chemical properties of food
4. Food technology: thermal treatments, separation processes, dehydration, concentration, etc.

Therefore, it is recommended to have passed the first three years of the Degree before enrolling in this subject.

## 3. Justification in the curriculum, relation to other subjects and to the profession

The subject of Dairy Products is part of the curriculum within the Food Technology module, in the field of Food Industries I.

Its objective is that the student knows in depth the components of milk and its properties as well as the technologies that are applied in the elaboration of dairy products at an industrial level.

It is a core subject, which is taught in the last year of the Degree, when the student has already achieved a fairly broad knowledge of Food Science and Technology and has acquired skills related to these disciplines.

The skills acquired by the student in this subject will be essential when developing a professional activity related to the dairy industry, one of the main industries of the food sector.

## 4. Degree competences achieved in this course

## Course competences

Code	Description
E04	To know the basic fundamentals of instrumentation and process control in the food industry
E05	To know the composition, physico-chemical properties, nutritional value and sensory properties of foods
E06	To know and be able to handle the techniques and procedures of food analysis
E08	To be able to apply the technological advances and the innovation in foods and food processing processes in the food industry and to evaluate their acceptability by consumers
E09	To know, optimize and control the production and conservation food processes
E10	To acquire knowledge on equipments and systems for the automatization and control of food processing
E11	To qualify to be able to evaluate the effects of processing on the components and properties of foods
E12	To acquire knowledge on microbiology and biotechnology and their applications in the food processing
E13	To know the organoleptic properties of foods and be able to apply methodology and techniques of sensory analysis
E18	To acquire knowledge on food legislation and normalization. To counsel legally, scientifically and technologically the food industry and consumers.
E19	To know the fundamentals of quality and traceability systems and be able to perform their deploy, as well as to evaluate and control the food quality
E22	To perform formation of staff in the food sector
E24	To assure and improve the nutritional quality and the health properties of ingredients and foods
G06	To dominate the Technologies of the Information and the Communication (TIC) to user's level, which allows to work in virtual spaces, Internet, electronic databases, as well as with common software packages (e.g. Microsoft Office). To possess ability of organization and planning, initiative, entrepreneurship and aptitude to be employed in teamworks. To possess

G07	capacity of resolution of specific problems of the professional area and to develop the critical reasoning and decision making.
G09	To develop the motivation for quality, the capacity to adapt to new situations and the creativity.

## 5. Objectives or Learning Outcomes

### Course learning outcomes

#### Description

To acquire skills regarding the physico-chemical analysis in the food (edible fats, grape and wine, dairy and meat products).

To acquire basic and applied knowledge on the majority and minority chemical compounds with influence in the sensory properties (color, smell, flavor, texture), or related to technological processes or of instability of the different food studied.

To qualify the student in order to determine the effects of the technological processes on the composition of the above mentioned food.

To have knowledge on the quality control and the procedures that guarantee the traceability of the meat and dairy products, wine, fats and oils.

To advance in the knowledge of the physico-chemical, nutritional and functional properties, as well as the alterations that can experiment the cereals and its derivatives, as well as of different type of drinks.

To learn how to detect the origin of defects in processed foods and their possible prevention or correction.

### Additional outcomes

## 6. Units / Contents

**Unit 1: General characteristics of milk**

**Unit 2: Composition of milk. Carbohydrates. Lipids. Proteins. Enzymes, vitamins and minerals.**

**Unit 3: Microbiology of raw milk**

**Unit 4: Reception and treatments of milk in the dairy industry**

**Unit 5: Consumer milks. I: pasteurized milk and sterilized milk. II: Concentrated, evaporated and condensed milks. III. Milk powder**

**Unit 6: Starter cultures**

**Unit 7: Cheese: I. general aspects. II. Coagulation, draining, pressing and salting. III. Microbiological and biochemical aspects of ripening. IV.**

**Classification and comparative technology of cheeses.**

**Unit 8: Classification and comparative technology of cheeses. Manchego cheese**

**Unit 9: Fermented milks. Probiotics**

**Unit 10: Cream and butter**

**Unit 11: Ice creams**

**Unit 12: By-products of the dairy industry**

### ADDITIONAL COMMENTS, REMARKS

#### PRACTICAL CONTENTS

BLOCK I: Milk quality control (Laboratory)

-Determination of fat content.

-Determination of dry matter.

-Determination of pH.

-Determination of acidity.

-Determination of density.

-Methylene blue/resazurin reduction test.

BLOCK II: Manufacture of dairy products (Pilot Plant)

BLOCK III: Sensory analysis

-Sensory analysis of different varieties of cheeses from around the world

## 7. Activities, Units/Modules and Methodology

Training Activity	Methodology	Related Competences (only degrees before RD 822/2021)	ECTS	Hours	As	Com	Description
Class Attendance (theory) [ON-SITE]	Lectures		1.28	32	Y	N	
Laboratory practice or sessions [ON-SITE]	Practical or hands-on activities		0.85	21.25	Y	Y	
Group tutoring sessions [ON-SITE]	Group tutoring sessions		0.05	1.25	N	-	
Writing of reports or projects [OFF-SITE]	Guided or supervised work		0.16	4	Y	Y	
Study and Exam Preparation [OFF-SITE]	Self-study		3.44	86	Y	Y	
Workshops or seminars [ON-SITE]	Case Studies		0.1	2.5	Y	N	
Final test [ON-SITE]	Assessment tests		0.12	3	Y	N	
<b>Total:</b>			<b>6</b>	<b>150</b>			
<b>Total credits of in-class work: 2.4</b>			<b>Total class time hours: 60</b>				
<b>Total credits of out of class work: 3.6</b>			<b>Total hours of out of class work: 90</b>				

As: Assessable training activity

Com: Training activity of compulsory overcoming (It will be essential to overcome both continuous and non-continuous assessment).

8. Evaluation criteria and Grading System			
Evaluation System	Continuous assessment	Non-continuous evaluation*	Description
Final test	70.00%	70.00%	Theoretical teaching will be evaluated by means of a final exam for which they will have the ordinary and extraordinary official calls.
Portfolio assessment	30.00%	30.00%	Evaluation of practical activities and other academically supervised activities, such as seminars, questionnaires or resolution of practical cases.
<b>Total:</b>	<b>100.00%</b>	<b>100.00%</b>	

According to art. 4 of the UCLM Student Evaluation Regulations, it must be provided to students who cannot regularly attend face-to-face training activities the passing of the subject, having the right (art. 12.2) to be globally graded, in 2 annual calls per subject, an ordinary and an extraordinary one (evaluating 100% of the competences).

#### Evaluation criteria for the final exam:

##### Continuous assessment:

To pass the subject a minimum of 4/10 in each part and an average grade equal to or greater than 5/10 applying the percentages will be required.

##### Non-continuous evaluation:

The same as continuous evaluation, facilitating the carrying out of tests or presentations electronically.

#### Specifications for the resit/retake exam:

The same criteria of the ordinary call will be applied.

#### Specifications for the second resit / retake exam:

The same criteria of the ordinary call will be applied.

9. Assignments, course calendar and important dates	
Not related to the syllabus/contents	
Hours	hours

10. Bibliography and Sources						
Author(s)	Title/Link	Publishing house	Citv	ISBN	Year	Description
Bylund, Gösta	Manual de industrias lácteas	A. Madrid Vicente Ediciones		84-7144-340-2 (Mundi)	2003	
Casado, P.	Métodos de análisis de la leche y productos lácteos	Industrias Lácteas Españolas			1987	
Luquet, F.M. Keilling, J., Wilde, R.	Leche y productos lácteos : vaca - oveja - cabra	Acribia		84-200-0695-5 (Vol.	1991	
Madrid Vicente, Antonio	Curso de industrias lácteas	A. Madrid Vicente Mundi-Prensa		84-87440-82-7	1996	
Ordóñez, J. A. (ed.)	Tecnología de los Alimentos. Vol. II: Alimentos de origen animal	Editorial Síntesis			1998	
Robinson, R. K.	Fabricación de queso : R. Scott	Acribia		84-200-0982-2	2002	
VEISSEYRE, Roger	Lactología técnica : composición, recogida, tratamiento y tr	Acribia		84-200-0458-8	1988	
	Fundamentals of cheese science	Aspen Publication		0-8342-1260-9	2000	
	MANUAL de industrias lácteas	Madrid A. Madrid Vicente, D.L.		84-87440-01-0	1990	