

**1. General information****Course:** MEAT 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:** 58326**ECTS credits:** 6**Academic year:** 2023-24**Group(s):** 22**Duration:** First semester**Second language:****English Friendly:** Y**Bilingual:** N**Lecturer:** JUSTA MARIA POVEDA COLADO - Group(s): 22

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**2. Pre-Requisites**

It is recommended that the student have basic knowledge about: physical-chemical composition, sensory properties, microbiology, quality control and food technology.

It is convenient that the student has passed most or all of the subjects of the first three years of the Degree.

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

The subject is included in Food Industries subjects belonging to the Food Technology Module of the Degree curriculum.

Students are expected to increase his knowledge about Meat Industry, acquiring the competences for the development of his professional activity in the Meat Industry.

The technology and operation of slaughterhouses and cutting rooms, as well as factories and production lines of the different meat derivatives will be studied. On the other hand, the student will know the chemical and biochemical processes of muscle transformation in meat, the chemical composition and the technological and sensory characteristics of meat and meat products.

**4. Degree competences achieved in this course****Course competences**

Code	Description
CB03	Be able to gather and process relevant information (usually within their subject area) to give opinions, including reflections on relevant social, scientific or ethical issues.
CB05	Have developed the necessary learning abilities to carry on studying autonomously
E05	To know the composition, phyco-chemical properties, nutritional value and sensory properties of foods
E06	To know and be able to handle the techniques and procedures of food analysis
E09	To know, optimize and control the production and conservation food processes
E11	To qualify to be able to evaluate the effects of processing on the components and properties of foods
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
G07	To possess ability of organization and planning, initiative, entrepreneurship and aptitude to be employed in teamworks. To possess capacity of resolution of specific problems of the professional area and to develop the critical reasoning and decision making.

**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

To know the technology of animal sacrifice and the design of slaughtering lines for pigs, cattle, sheep and poultry. To identify the structure of muscle, the major component of meat, as well as its chemical composition and nutritional value To know the conversion of the muscle to meat, its influence on quality and anomalies caused by ante and post mortem factors. To identify the parameters that define the quality of the meat, know its methodology of analysis and define the technological properties that determine the functionality of the meat at the time of its transformation. To know the different types of meat products, as well as the function of the ingredients and additives that participate in their formulation. To know the technology of elaboration of the different types of meat products: raw, cured, smoked, cooked, scalded, etc. Acquiring knowledge about hygiene and quality control carried out in the meat industry

#### 6. Units / Contents

##### Unit 1: Introduction

##### Unit 2: Slaughtering technology

##### Unit 3: Conversion of muscle to meat

##### Unit 4: Technological and sensory properties of meat

##### Unit 5: The preservation of meat

##### Unit 6: Ingredients and additives of meat products

##### Unit 7: Raw meat products

##### Unit 8: Dry-cured meat products I. Dry sausages

##### Unit 9: Dry-cured meat products II. Dry cured ham

##### Unit 10: Smoked meat products

##### Unit 11: Meat products treated by heat I. Cooked ham

##### Unit 12: Meat products treated by heat II. Meat emulsions

##### Unit 13: Meat and meat products packaging

##### Unit 14: Quality control in the meat industry

#### ADDITIONAL COMMENTS, REMARKS

#### THEORY CONTENTS:

The subject has been divided into 5 blocks:

BLOCK I. INTRODUCTION. THE MEAT SECTOR (Unit 1)

BLOCK II. SACRIFICE TECHNOLOGY (Unit 2)

BLOCK III. STRUCTURE, CHEMICAL COMPOSITION, ORGANOLEPTIC AND TECHNOLOGICAL PROPERTIES OF MEAT (Units 3 and 4)

BLOCK IV. MEAT PRODUCTS PRODUCTION TECHNOLOGY (Units 5-13)

BLOCK V. QUALITY CONTROL IN THE MEAT INDUSTRY (Unit 14)

#### PRACTICAL CONTENTS:

##### PHYSICOCHEMICAL ANALYSIS:

1. Determination of technological properties of fresh meat from different animal species: pH, Water retention capacity, Color determination (CIELAB)
2. Determination of the raw chemical composition of the meat (moisture, fat, protein)
3. Determination of the amount of myoglobin in the meat of different animal species
4. Determination of the salt content in meat products (sodium chloride, nitrifying salts)
5. Qualitative determination of starch content in meat products

##### SENSORY ANALYSIS:

Tasting of meat products (cured ham, sausages, cooked products...)

#### 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	
Practicum and practical activities report writing or preparation [OFF-SITE]	Group Work		0.28	7	Y	Y	
Writing of reports or projects [OFF-SITE]	Group Work		0.28	7	Y	N	
Problem solving and/or case studies [ON-SITE]	Workshops and Seminars		0.1	2.5	Y	N	
Group tutoring sessions [ON-SITE]	Group tutoring sessions		0.05	1.25	N	-	
Final test [ON-SITE]	Assessment tests		0.12	3	Y	Y	
Study and Exam Preparation [OFF-SITE]	Self-study		3.04	76	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%	Theory teaching will be evaluated by a written exam in the ordinary and extraordinary official calls.
Laboratory sessions	20.00%	20.00%	Practical teaching will be evaluated by a written exam in the ordinary and extraordinary official calls.
Assessment of problem solving and/or case studies	10.00%	10.00%	The assessment of problem solving/ case studies will be evaluated taking into account the portfolio delivered by the student and the oral defense of the same when it is considered convenient to carry it out
<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 activities, a minimum score of 4/10 must be obtained in the theory and practical exams.

To pass the course, a minimum of 5/10 must be obtained in all the evaluations of each evaluable activity.

##### Non-continuous evaluation:

Students who cannot follow the continuous assessment may request, at the beginning of the semester, to take the non-continuous assessment mode. In this case, they must deliver the problems / cases, without being obliged to do an oral presentation

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

There will be two exams: theory and practice that will allow the evaluation of all competences.

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

There will be a final exam that will allow the evaluation of all competences.

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
Carballo García, Berta María	Manual de bioquímica y tecnología de la carne	A.Madrid Vicente		84-87440-09-6	1991	
Essien, Effiong	Fabricación de embutidos : principios y práctica	Acribia		84-200-1054-5	2005	
Hui, Yiu H.	Ciencia y tecnología de la carne	Limusa		968-18-6549-9	2006	
Lawrie, R.A.	Ciencia de la carne	Acribia		84-200-0856-7	1998	
Price, J.F.	Ciencia de la carne y de los productos cárnicos	Acribia		84-200-0386-7	1994	
Richardson, R. I.	Ciencia de la carne de ave	Acribia		84-200-0944-X	2001	
Varnam, Alan H.	Carne y productos cárnicos : tecnología, química y microbiol	Acribia		84-200-0847-8	1998	
Ventanas, J.	Tecnología del jamón ibérico : de los sistemas tradicionales	Mundi-Prensa		84-7114-944-3	2001	
Warriss, P. D.	Ciencia de la carne	Acribia		84-200-1005-7	2003	
Wirth, F.	Tecnología de los embutidos escaldados	Acribia		84-200-0723-4	1992	
YAGÜE GIL, Angel	Preparacion, fabricacion y defectos de los embutidos curados	Ayala		84-87269-07-9	1992	
Bello Gutiérrez, José	Jamón curado : aspectos científicos y tecnológicos : perspec	Díaz de Santos		978-84-7978-884-1	2008	