

Course guide

390329 - ICL - Meat and Dairy Industries

Last modified: 02/04/2024

Unit in charge: Barcelona School of Agri-Food and Biosystems Engineering
Teaching unit: 745 - DEAB - Department of Agri-Food Engineering and Biotechnology.

Degree: BACHELOR'S DEGREE IN FOOD ENGINEERING (Syllabus 2009). (Compulsory subject).

Academic year: 2023 **ECTS Credits:** 6.0 **Languages:** Catalan, Spanish

LECTURER

Coordinating lecturer: Achaerandio Puente, Maria Isabel

Others: Dantas, Adriana

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Specific:

1. Food engineering and technology: Engineering and basic operations in food industry.
2. Food engineering and technology: Food technology.
3. Food engineering and technology: Processes in food industry.
4. Food engineering and technology: Modeling and optimization.

TEACHING METHODOLOGY

The teaching methodology will consist of theoretical classes of the whole group where from an introduction to a subject or from questions about subjects that students want to learn

Practical classes with small group where dairy and meat products will be elaborated in the pilot plant and the laboratory where quality controls will be made.

It will be complemented with outings to visit the meat and dairy industries.

Students will have to carry out work on the topics proposed in the theoretical class as well as solve practical cases on the subject.

LEARNING OBJECTIVES OF THE SUBJECT

The student must be able to describe, explain and develop the main processing lines of the agri-food industries derived from the dairy and meat industries, in terms of characteristics and quality of raw materials, technical specifications of ingredients, methods of application of the usual additives, equipment, auxiliary machinery, specific technology and evolution and inspection of the product.

The student must be able to advocate changes in a process line and design pilot experiences to test for changes in product formulation or processing technology.

STUDY LOAD

Type	Hours	Percentage
Hours small group	20,0	13.33
Hours large group	40,0	26.67
Self study	90,0	60.00

Total learning time: 150 h



CONTENTS

(ENG) CIÈNCIA DE LA CARN

Description:

- (ENG) 1. Chemistry, biochemistry and microbiology of meat.
2. The slaughterhouse. Industrial production of meat
3. Meat quality.
4. Legislative framework. Labeling and traceability

Related activities:

- (ENG) Activity 1: Theoretical class
Activity 2: Written test
Activity 3: Making products
Activity 4: Departures

Full-or-part-time: 25h

- Theory classes: 6h
Laboratory classes: 2h
Self study : 17h

(ENG) BASES DE L'ELABORACIÓ DE PRODUCTES CARNIS

Description:

- (ENG) Classification and description of processed meat products.
2. Preparation, mixing and processing operations: meat pastes and emulsions
3. Conservation operations based on the reduction of water activity, the increase in temperature, the reduction of pH and the use of chemicals.
4. Raw materials, additives and starter crops for use in the meat industry
5. Legislative framework

Related activities:

- (ENG) Activity 1: Theoretical class
Activity 2: Written test
Activity 3: Making products
Activity 4: Technical visits

Full-or-part-time: 10h

- Theory classes: 2h
Self study : 8h



(ENG) ELABORACIÓ DE PRODUCTES CARNIS

Description:

- (ENG) 1. Preparation of raw and cooked meat products
2. Preparation of cured meat products

Related activities:

- (ENG) Activity 1: Theoretical class
Activity 2: Written test
Activity 3: Making products

Full-or-part-time: 40h

- Theory classes: 12h
Laboratory classes: 8h
Self study : 20h

(ENG) MILK SCIENCE

Description:

- (ENG) 1. Chemical and biochemical composition of milk
2. Microbiology of milk
3. Payment of milk for quality

Related activities:

- (ENG) Activity 1: Theoretical class
Activity 2: Written test
Activity 3: Making products
Activity 4: Technical visits

Full-or-part-time: 25h

- Theory classes: 6h
Laboratory classes: 2h
Self study : 17h

(ENG) LIQUID MILK PROCESSES

Description:

- (ENG) 1. Milk collection and milk reception in the industry
2. Previous operations. Sanitation, skimming and homogenization
3. Pasteurization and Sterilization
4. Concentrated, condensed and evaporated milks

Related activities:

- (ENG) Activity 1: Theoretical class
Activity 2: Written test
Activity 3: Making products
Activity 4: Technical visits

Full-or-part-time: 23h

- Theory classes: 7h
Laboratory classes: 2h
Self study : 14h



(ENG) ELABORACIÓ DE PRODUCTES LACTIS

Description:

- (ENG) 1. Fermented milks
- 2. Cheese
- 3. Cream and butter
- 4. Ice cream and dairy desserts

Related activities:

- (ENG) Activity 1: Theoretical class
- Activity 2: Written test
- Activity 3: Making products
- Activity 4: Technical visits

Full-or-part-time: 27h

- Theory classes: 7h
- Laboratory classes: 6h
- Self study : 14h

ACTIVITIES

(ENG) ACTIVITAT 1: CLASSES D'EXPLICACIÓ

Description:

Description: Master class, case study, presentation of the result of autonomous learning, discussion on the study of cases and the presentation of autonomous learning

Full-or-part-time: 98h

- Theory classes: 38h
- Self study: 60h

(ENG) ACTIVITAT 2: PROVES INDIVIDUALS D'AVALUACIÓ

Full-or-part-time: 2h

- Theory classes: 2h

(ENG) ACTIVITAT 3: PRÀCTICA

Full-or-part-time: 40h

- Laboratory classes: 16h
- Self study: 24h

(ENG) ACTIVITAT 4: SORTIDES

Full-or-part-time: 10h

- Laboratory classes: 4h
- Self study: 6h

GRADING SYSTEM

The final qualification for the course (Final: Final grade) is obtained as follows:

N1: Activity 2: 2 Individual assessment tests (each test is worth 50%)

N2: Activity 3 and 4: Questionnaire about practices and departure

N3: Activities 3: Report on the work done to the practices

N4: Resolution of practical cases and works proposed to class

$N_{final} = 0.7N1 + 0.1N2 + 0.1N3 + 0.1N4$

EXAMINATION RULES.

The student will receive a calendar with the programming of the activities and delivery of the deliveries of the different activities.

Attendance at sessions where cooperative learning activities are carried out will be compulsory, as well as practical sessions (computer room, laboratory, pilot plant and external visits).

BIBLIOGRAPHY

Basic:

- Alais, C. Ciencia de la leche: principios de técnica lechera [on line]. Barcelona: Reverté, 1985 [Consultation: 26/07/2022]. Available on: https://www-ingebook-com.recursos.biblioteca.upc.edu/ib/NPcd/IB_BooksVis?cod_primaria=1000187&codigo_libro=12531. ISBN 8429118152.

- Romero del Castillo, R. Productos lácteos: tecnología [on line]. Barcelona: UPC, 2004 [Consultation: 15/05/2020]. Available on: <http://hdl.handle.net/2099.3/36810>. ISBN 8483017458.

- Veisseyre, R. Lactología técnica: composición, recogida, tratamiento y transformación de la leche. Zaragoza: Acribia, 1980. ISBN 8420004588.

- Feiner, G. Meat products handbook: practical science and technology. Boca Raton: CRC Press, 2006. ISBN 9780849380105.

- Durand, D. Tecnología de los productos de charcutería y salazones. Zaragoza: Acribia, 2002. ISBN 8420009938.

- Schweigert, Bernard S.; Price, James F.; Fuente, J.L. Ciencia de la carne y de los productos cárnicos. 2a ed. Zaragoza: Acribia, 1994. ISBN 8420007595.

- Warriss, P. D. Ciencia de la carne. Zaragoza: Acribia, 2003. ISBN 8420010057.

- Purslow, Peter P. New aspects of meat quality : from genes to ethics [on line]. Oxford: Woodhead Publishing, [2017] [Consultation: 15/07/2022]. Available on: <https://ebookcentral-proquest-com.recursos.biblioteca.upc.edu/lib/upcatalunya-ebooks/detail.action?pq-origsite=primo&docID=4828807>. ISBN 9780081005934.

- Alvarado, Juan de Dios. Cálculo de procesos en leche y productos lácteos [on line]. Zaragoza (España): Editorial Acribia, S.A, [2018] [Consultation: 27/09/2023]. Available on: https://www-ingebook-com.recursos.biblioteca.upc.edu/ib/NPcd/IB_BooksVis?cod_primaria=1000187&codigo_libro=8773. ISBN 9788420011837.