28951 - Processing technologies in the food industries

Información del Plan Docente

Academic Year	2016/17
Academic center	201 - Escuela Politécnica Superior
Degree	437 - Degree in Rural and Agri-Food Engineering
ECTS	6.0
Course	4
Period	First semester
Subject Type	Compulsory
Module	---

1.Basic info

1.1.Recommendations to take this course

1.2.Activities and key dates for the course

2.Initiation

2.1.Learning outcomes that define the subject

2.2.Introduction

3.Context and competences

3.1.Goals

3.2.Context and meaning of the subject in the degree

3.3.Competences

3.4.Importance of learning outcomes

4.Evaluation

5.Activities and resources

5.1.General methodological presentation

The learning process that is designed for this subject is based on the following:

- Theoretical sessions: participatory lectures which will deepen the quality assessment of raw of animal and vegetable origin and in the processes for the conservation of these raw materials and of the products derived therefrom.

- Practical sessions in laboratory where students become familiar with the quality parameters of different foods and the factors influencing their elaboration process and its final quality.

- Visits to food industries: visits to food industries are crucial for practical training of students. They are an indispensable complement to theoretical explanations, especially those related to some technological processes that are difficult to understand for the student, even with flow charts, graphs or diagrams used in theoretical teaching. Before the visit, the processes and the salient features of the establishment will be explained. This will allow students to more easily follow the explanations of technicians and allow an exchange of views with students.

- Mentored or academically directed group work: the knowledge and skills acquired in the course will be integrated with the completion of a group work in which students have to elaborate in the Pilot Plant a food product that previously have been assigned by the teacher. To do this they must first identify the raw materials, ingredients and additives used, the necessary equipment and its operating parameters, the processes of maturation and / or storage after manufacture and then run it to present the product as appear on the market, including labeling, and taking into account legal requirements.

All materials and resources used in teaching will be available in the Digital Teaching Ring the University of Zaragoza offers students and teachers (http://add.unizar.es).

5.2.Learning activities

The program that the student is offered to achieve the expected results includes the following activities ..

- 30 hours of lectures (paticipative master clases)

- 10 hours of laboratory practices organized in 4 sessions of 2 hours.

- 10 hours of visits to food industries organized in 3 visits of 3 - 4 hours

- 10 hours for preparation, implementation and presentation of a mentored work organized in 5 sessions of 1, 2 and 4 hours (for the session in pilot plant).

Academic tutoring: Students will have the support and advice of the teacher. Schedule will present well in advance.

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5.3.Program

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Theory programme

TEACHING UNIT 1. INTRODUCTION

Topic 1. Introduction to the Food Processing Industry Technology course (0.5 ECTS)

Teaching/ learning activities:

Interactive master's class: 0.5 ECTS

TEACHING UNIT 2. TECHNOLOGY OF MEAT AND MEAT PRODUCTS

Topic 2. Introduction (0.05 ECTS)

Topic 3. Transforming the muscle into meat (0,1 ECTS)

Topic 4. Meat quality (0.15 ECTS)

Topic 5. Fresh meat technology (0,1 ECTS)

Topic 6. Meat derivatives: Classification and main technological principles (0.3 ECTS)

Topic 7. Meat preparation and chopped raw meat product technologies (0.1 ECTS)

Topic 8. Whole raw meat product technology (0.1 ECTS)

Topic 9. Heat-treated meat product technologies (0.1 ECTS)

Teaching/ learning activities:

Interactive master's class: 1 ECTS

TEACHING UNIT 3. TECHNOLOGY OF FISH AND DERIVED PRODUCTS

Topic 11. Fish technology (0.1 ECTS)

Topic 12. Technology of products derived from fish (0.1 ECTS)

Teaching/ learning activities:

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Interactive master's class: 0.2 ECTS

TEACHING UNIT 4. TECHNOLOGY OF MILK AND DAIRY PRODUCTS

Topic 13. Introduction to the dairy sector (0.05 ECTS)

Topic 14. Composition and physical-chemical structure of milk (0.15 ECTS)

Topic 15. Physical properties, physical-chemical and organoleptic properties of milk. Hygienic quality of milk (0.1 ECTS)

Topic 16. Collection, refrigeration and operations prior to the heat treatment of milk (0.1 ECTS)

Topic 17. Milk for consumption: Pasteurized and sterilized milk (0.1 ECTS)

Topic 18. Concentrated milks (0.1 ECTS)

Topic 19. Fermented milk: Yoghurts and other fermented milks (0.1 ECTS)

Topic 20. Cream and butter (0.1 ECTS)

Topic 21. Cheese (0.2 ECTS)

Teaching/ learning activities:

Interactive master's class: 1 ECTS

TEACHING UNIT 5. EGG AND EGG PRODUCTS TECHNOLOGY

Topic 22. Eggs and egg products (0,1 ECTS)

Teaching/ learning activities:

Interactive master's class: 0,1 ECTS

TEACHING UNIT 6. TECHNOLOGY OF FRUIT AND VEGETABLE PRODUCTS AND DERIVATIVES

Topic 23. Introduction to the fruit and vegetable sector (0.5 ECTS)

Topic 24. Characteristics and conservation of fresh fruit and vegetables (0.1 ECTS)

Topic 25. Minimally processed products and products in the pre-prepared range (0.05 ECTS)

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Topic 26. Preserved, frozen and dehydrated fruit and vegetable products (0.15 ECTS)

Topic 27. Producing juices and purees (0.1 ECTS)

Topic 28. Producing flour and bread (0.1 ECTS)

Topic 29. Producing olives and olive oil (0.1 ECTS)

Teaching/ learning activities:

Interactive master's class: 0.65 ECTS

Practical Programme

TEACHING UNIT 2. TECHNOLOGY OF MEAT AND MEAT PRODUCTS

Practical 1. Parameters of meat quality (0.2 ECTS)

Practical 2. Determining meat additives (0.2 ECTS)

Visit to an industry producing meat products (0.3 ECTS)

Teaching/ learning activities:

Laboratory practicals: 0.4 ECTS

Visits to food processing industries: 0.3 ECTS

TEACHING UNIT 4. TECHNOLOGY OF MILK AND DAIRY PRODUCTS

Practical 3. Parameters of milk quality (0,2 ECTS)

Practical 4. Parameters for controlling the heat treatment of milk. Factors influencing the coagulation of milk (0.2 ECTS)

Visit to an industry producing cheese and yoghurt products (0.3 ECTS)

Teaching/ learning activities:

Laboratory practicals: 0.4 ECTS

Visits to food processing industries: 0.3 ECTS

TEACHING UNIT 6. TECHNOLOGY OF FRUIT AND VEGETABLE AND DERIVED PRODUCTS

Practical 5. Influence of different parameters on the organoleptic quality of foods originating from plants (0.2 ECTS)

Visit to an industry producing concentrated juice products (0.4 ECTS)

Teaching/ learning activities:

Laboratory practicals: 0.2 ECTS

Visits to food processing industries: 0.4 ECTS

For the whole course and temporal coincidence with units 3, 4 and 5:

Supervised project: 1 ECTS

5.4.Planning and scheduling

Week	Lectures	Laboratory practices	VisitS	Mentored work	Exams/ Reports
1	Unit 1 (0, 5 h) UD 2 (1,5 h)				
2	Unit 2 (2 h)				
3	Unit 2 (2 h)	LP1(2 h)			
4	Unit 2 (2 h)	LP2 (2 h)			Report LP1
5	Unit 2 (2 h)		Visit 1 (3 h)		Report LP2
6	Unit 2 (0,5 h)			TT 1 (1 h)	Report VISIT

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	Unit 3 (1,5 h)				1
7	Unit 3 (0,5 h) Unit 4 (1,5 h)	LP3 (2 h)			
8	Unit 4 (2 h)				Report LP3 Exam units 1, 2 and 3
9	Unit 4 (2 h)		Visit 2 (3 h)		
10	Unit 4 (2 h)	LP4 (2h)			Report VISIT 2
11	Unit 4 (2 h)		Visit 3 (4 h)		Report LP4
12	Unit 4 (0,5 h) Unit 5 (1 h) Unit 6 (0,5 h)			TT 2 (2 h)	Report VISIT 3
13	Unit 6 (2 h)			TT 3 (4 h)	
14	Unit 6 (2 h)	LP5 (2 h)		TT 4 (1 h)	
15					
16					
17	Unit 6 (2 h)			TT 5 (2 h)	Report LP5 MW oral presentation

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					Exam units 4, 5 and 6

5.5.Bibliography and recomended resources

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- **BB** Manual de industrias de los alimentos. [director y autor] M .D. Ranken . 2ª ed. Zaragoza : Acribia, D.L.1993
- **BB** Tecnología de los alimentos. Vol.II, Alimentos de origen animal / Juan A. Ordóñez Pereda (editor) . Madrid : Síntesis, D.L. 1998
- **BC** Bylund, Gösta. Manual de industrias lácteas / texto : Gösta Bylund ; traducción de la versión inglesa a la española por : Antonio López Gómez López [y] Antonio Madrid Vicente . Madrid : A. Madrid Vicente : Mundi-Prensa, D.L. 2003
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- **BC** Ciencia de la leche y tecnología de los productos lácteos / P. Walstra ... [et al.] ; traducción de Rosa Mª Oria Almudí . Zaragoza : Acribia, 2001
- **BC** El pescado y los productos derivados de la pesca : composición, propiedades nutritivas y estabilidad / coordinador, Adriaan Ruiter ; traducido por María Luisa Ferrándiz Martín ; revisión científica, Bernabé Sanz Pérez . Zaragoza : Acribia, 1999
- **BC** Madrid Vicente, Antonio. El pescado y sus productos derivados / A. Madrid, Juana M. Madrid, R. Madrid . 2a ed. Madrid : AMV : Mundi-Prensa, 1999
- **BC** Mountney, George J.. Tecnología de productos avícolas / George J. Mountney, Carmen R. Parkhurst ; [traducción realizada por José Fernández-Salguero Carretero... (et al.)] . Zaragoza : Acribia, 2001
- **BC** Procesado de frutas / editores, D. Arthey, P.R. Ashurst ; traducido por Justino Burgos González, Carmen Aragón Robles . Zaragoza : Acribia, D.L. 1997
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- **BC** Tecnología del procesado del pescado / editor, George M. Hall ; traducido por Reyes Pla Soler, Angels Videla Ces y la colaboración de Monserrat Mor-Mur Francesch . Reimp. de la 2ª ed. en inglés Zaragoza : Acribia, 2009
- **BC** Varnam, Alan H.. Carne y productos cárnicos : Tecnología, química y microbiología / Alan H. Varnam, Jane P. Sutherland ; traducido por Isabel Jaime Moreno . Zaragoza : Acribia, D.L. 1998
- **BC** Varnam, Alan H.. Leche y productos lácteos : tecnología, química y microbiología / Alan H. Varnam, Jane P. Sutherland ; traducido por Rosa Oria Almudí . [1ª ed.] Zaragoza : Acribia, D.L. 1995