28951 - Processing technologies in the food industries

Información del Plan Docente

Academic Year	2017/18
Faculty / School	201 - Escuela Politécnica Superior
Degree	437 - Degree in Rural and Agri-Food Engineering
ECTS	6.0
Year	4
Semester	First semester
Subject Type	Compulsory
Module	---

1.General information

1.1.Introduction

1.2.Recommendations to take this course

1.3.Context and importance of this course in the degree

1.4.Activities and key dates

2.Learning goals

2.1.Learning goals

2.2.Importance of learning goals

3.Aims of the course and competences

3.1.Aims of the course

3.2.Competences

4.Assessment (1st and 2nd call)

4.1.Assessment tasks (description of tasks, marking system and assessment criteria)

5.Methodology, learning tasks, syllabus and resources

5.1.Methodological overview

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 tasks

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.Syllabus

The course will address the following topics:

Theory sessions

UNIT 1. INTRODUCTION

Topic 1. Introduction to the subject Technology of Agro-Food Industries (0,5 ECTS)

Teaching / learning activities:

Participatory Master Class: 0,5 ECTS

UNIT 2. TECHNOLOGY OF MEAT AND MEAT PRODUCTS

Topic 2. Introduction (0,05 ECTS)

Topic 3. Transformation of muscle in meat (0,1 ECTS)

Topic 4. Quality of meat (0,15 ECTS)

Topic 5. Fresh meat technology (0.1 ECTS)

Topic 6. Meat derivatives: classification and main technological processes (0,3 ECTS)

Item 7. Technology of meat preparations and raw meat products (0.1 ECTS)

Item 8. Technology of whole raw meat products (0.1 ECTS)

Topic 9. Heat treated meat products technology (0.1 ECTS)

Teaching / learning activities:

Participatory Master Class: 1 ECTS

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UNIT 3. FISH AND FISH PRODUCTS TECHNOLOGY

Topic 11. Fish Technology (0.1 ECTS)

Topic 12. Technology of fish products (0.1 ECTS)

Teaching / learning activities:

Participatory Master Class: 0,2 ECTS

UNIT 4. TECHNOLOGY OF MILK AND DAIRY PRODUCTS

Topic 13. Introduction to the dairy sector (0,05 ECTS)

Item 14. Composition and physical-chemical structure of milk (0,15 ECTS)

Item 15. Physical, physical-chemical and organoleptic properties of milk. Hygienic quality of milk (0,1 ECTS)

Item 16. Collection, refrigeration and previous operations to the thermal treatment of milk (0.1 ECTS)

Item 17. Pasteurized milk and sterilized milk (0,1 ECTS)

Topic 18. Concentrated milk (0.1 ECTS)

Topic 19. Fermented milks: yogurt and other fermented milks (0,1 ECTS)

Unit 20. Cream and butter (0,1 ECTS)

Topic 21. Cheese (0,2 ECTS)

Teaching / learning activities:

Participatory Master Class: 1 ECTS

UNIT 5. TECHNOLOGY OF EGG AND OVOPODULTS

Topic 22. Egg and egg products (0 ECTS)

Teaching / learning activities:

Participatory Master Class: 0.1 ECTS

UNIT 6. TECHNOLOGY OF VEGETABLE PRODUCTS AND DERIVATIVES

Topic 23. Introduction to the horticultural sector (0,5 ECTS)

Theme 24. Characteristics and conservation of fresh fruits and vegetables (0.1 ECTS)

Item 25. Minimally processed products and products of the fifth range (0,05 ECTS)

Item 26. Canned, frozen and dehydrated fruit and vegetable products (0,15 ECTS)

Topic 27. Juice and cremogen production (0.1 ECTS)

Unit 28. Flour and bread (0.1 ECTS)

Topic 29. Olive and olive oil production (0.1 ECTS)

Teaching / learning activities:

Participatory Master Class: 0,65 ECTS

Practical sessions

UNIT 2. TECHNOLOGY OF MEAT AND MEAT PRODUCTS

Practical 1. Meat quality parameters (0.2 ECTS)

Practical 2. Determination of meat additives (0.2 ECTS)

Visit to the meat processing industry (0,3 ECTS)

Teaching / learning activities:

Laboratory Practice: 0,4 ECTS

Visits to agro-food industries: 0,3 ECTS

UNIT 4. TECHNOLOGY OF MILK AND DAIRY PRODUCTS

Practical 3. Milk Quality Parameters (0.2 ECTS)

Practical 4. Parameters for the control of the thermal treatment of milk. Factors influencing milk coagulation (0,2 ECTS)

Visit to the cheese and yoghurt processing industry (0,3 ECTS)

Teaching / learning activities:

Laboratory Practice: 0,4 ECTS

Visits to agro-food industries: 0,3 ECTS

UNIT 6. TECHNOLOGY OF HORTO-FRUIT PRODUCTS AND DERIVATIVES

Practical 5. Influence of different parameters on the organoleptic and nutritional quality of foods of plant origin (0.2 ECTS)

Visit to the juice processing industry (0,4 ECTS)

Teaching / learning activities:

Laboratory Practice: 0,2 ECTS

Visits to agro-food industries: 0,4 ECTS

For the whole subject and coinciding temporarily with units 3, 4 and 5: Tutored work: 1 ECTS

5.4.Course planning and calendar

Week	Theory sessions	Práctical Sessions	Visits	Mentored work	Exams/Reports
1	U 1 (0, 5 h)				

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	U 2 (1,5 h)				
2	U 2 (2 h)				
3	U 2 (2 h)	LS1 (2 h)			
4	U 2 (2 h)	LS2 (2 h)			Report LS1
5	U 2 (2 h)		V1 (3 h)		Report LS2
6	U 2 (0,5 h) U 3 (1,5 h)				Report V1
7	U 3 (0,5 h) U 4 (1,5 h)	LS3 (2 h)			
8	U 4 (2 h)			MW 1 (1 h)	Exam units 1,2 and 3 Report LS3
9	U 4 (2 h)	LS4 (2 h)			
10	U 4 (2 h)		V2 (3 h)	MW 2 (1 h)	Report LS4
11	U 4 (2 h)				Report V2
12	U 4 (0,5 h) U 5 (1 h) U 6 (0,5 h)			MW 3 (2 h)	

13	U 6 (2 h)		V3 (4 h)	MW 4 (2 h)	
14	U 6 (2 h)	LS5 (2 h)		MW 5 (2 h)	ReportV3
15					
16					
17	U 6 (1,5 H)			MW 6 (2 h)	Report LS5 Exam units 4, 5 and 6

5.5.Bibliography and recommended resources

BB Ciencia de los alimentos : bioquímica, microbiología, procesos, productos. Volumen 2, Tecnología de los productos alimentarios / coordinadores, Romain Jeantet ... [et al.]. Zaragoza : Acribia, 2010
BB Madrid Vicente, Antonio. Nuevo manual de industrias alimentarias / autores, Antonio Madrid Vicente, Javier Madrid Cenzano . [3ª] ed. amp. y corr. Madrid : A. Madrid Vicente : Mundi-Prensa, 2001
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
BC Ciencia de la carne y de los productos cárnicos / editado por James F. Price, Bernard S. Schweigert ; traducido por Juan Luis de la Fuente . 2ª ed. Zaragoza : Acribia, 1994
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
BC Procesado de hortalizas / [directores], David Arthey, Colin Dennis . Zaragoza : Acribia, 1992
BC Stadelman, W. J.. Egg science and technology / W.J. Stadelman, Owen J. Cotterill . 2nd ed. Westport, Connecticut : AVI Publishing Company, cop. 1977
BC Tecnología de la carne y de los productos cárnicos / coordinador J. P. Girard ; prólogo C. Valin ; traducido por Carlos Compairé Fernández . [1ª ed.] Zaragoza : Acribia, D.L. 1991
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

The updated recommended bibliography can be consulted in:
http://psfunizar7.unizar.es/br13/egAsignaturas.php?id=8112