



Universitat de Lleida

DEGREE CURRICULUM
FOOD PROCESSING

Coordination: Robert Soliva Fortuny

Academic year 2015-16

Subject's general information

Subject name	FOOD PROCESSING
Code	100609
Semester	2nd Q Continuous evaluation
Typology	Compulsory
ECTS credits	6
Theoretical credits	0
Practical credits	0
Coordination	Robert Soliva Fortuny
Department	Food Technology
Teaching load distribution between lectures and independent student work	On-site hours 60 - Lectures 30 - Practice and tutorials 16 - Seminars 14 Off-site hours 90
Modality	Presencial
Important information on data processing	Consult this link for more information.
Language	Catalan
Degree	Degree in Human Nutrition and Dietetics
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Subject's extra information

L'assignatura figura en el segon curs del pla d'estudis del Grau en Nutrició Humana i Dietètica, amb caràcter troncal. La matèria pretén dotar a l'estudiant del Grau dels coneixements sobre els processos tecnològics implicats en la transformació, i conservació dels aliments, permetent-los diferenciar els diferents efectes positius i negatius que aquests processos tenen sobre la seva composició i valor nutritiu, de forma que puguin aplicar-los en la seva futura activitat professional. Amb aquesta finalitat, s'estudiaran les diferents formes de transformació d'aliments, tant a nivell industrial com domèstic, amb una especial atenció als processos d'elaboració d'aliments per a col·lectivitats. Es pretén que l'estudiant entengui les repercussions que el processat i manipulació dels aliments presenten quan es vol assolir un determinat objectiu en el seu àmbit professional.

Learning objectives

- To know the principles of the most significant technologies for food processing, preservation and storage (C1, C2).
- To analyze food transformation processes, from industrial processing to culinary preparation techniques (C1, C2, C4).
- To identify the factors affecting food safety, organoleptical and nutritional quality involved in food processes, as well as the main ways for assessment and control to be applied (C1, C2).
- To critically evaluate the use of raw materials or substitutive ingredients, as well as the associated implications, during processing and culinary treatments (C1, C2, C4).
- To evaluate the positive and negative effects of food processing on the composition, physicochemical and organoleptical properties (C1, C2, C3).
- To discuss the incidence of processing on the nutritional value of food products and nutrients bioavailability (C1, C2, C4)
- To justify the application of certain processes and/or cooking procedures to achieve specific gastronomic, nutritive or dietetic targets (C2, C4)
- To use the bases of planning, development and evaluation of sensory tests with consumers (C3).
- To design food products of interest in the field of nutrition and dietetics achieved through the integration of learning (C1, C2, C3).
- To properly interpret legislation and applicable regulations within the field of food processing and cooking treatments (C1, C2).

Competences

C1 . To know the basic processes involved in the production, processing and preservation of the main food products.

C2 . To know the effects of traditional cooking techniques on the organoleptical and nutritional properties of food products.

C3 . To understand and apply the fundamentals of sensory analysis of food products.

C4 . To correctly express oneself, orally and in writing.

Subject contents

1. **Introduction to food processing.** Objectives, historical background and fundamental concepts (unit operations, processes and flow diagrams).
2. **Pre-processing operations.** Classification, manipulation and conditioning of raw materials. Cutting operations. Sanitation and evisceration. Mixing and homogenisation. Blanching.
3. **Food transformation and preservation technologies.** Cold preservation (chilling and freezing); evaporation; drying techniques; chemical stabilization; separations; thermal treatments; emerging thermal and nonthermal technologies; hurdle technology.
4. **Application of processing principles to food preservation.** Dairy products; meat and fishery products; egg products; cereal-based products; fruit and vegetable products.
5. **Packaging, storage and distribution of food products.** Materials and packaging techniques; controlled/modified atmospheres; storage and distribution conditions; shelf-life evaluation.
6. **Culinary processing.** Conditioning operations, cold operations, main cooking techniques and their impact on foods.

Methodology

Lectures

These will be taught with the whole group. The aim is to provide a general view of the contents specifically related with the course with emphasis on skills that refer to food processing.

Seminars

Seminars will take place in the classroom. Each student is assigned to a seminar group. They will consist in the analysis of scientific papers and/or search of information that will complement the contents developed in lectures. Participation and discussion will be encouraged.

Tutorials

Advisory meetings will be scheduled in small groups with the aim of preparing the course project.

Lab practice

Assistance to this activity is compulsory. Lab practice will be carried out in groups of 3-4 students and will take place in the pilot plant of the food technology department.

Course project

It will be proposed to groups of 4 student. Each group will prepare a brief oral exposition and a written document and will have to attend to the scheduled meetings in order to follow up the development of the work.

Development plan

On-site (40%)

Off-site (60%)

Evaluation

1. Group project: 15%.

2. Written test I (individual): 20%.

3. Written test II (individual): 20%.

4. Written test III (individual): 20%.

In order to average the other qualifications, a qualification above 5 is required for the average of the three written examinations. In any other case, to pass the subject, the student will have to repeat any test with a qualification below 5.

5. Lab practice: 15%.

A memory will be presented. Formal (1/10), bibliographical (2/10) and conceptual (6/10) aspects will be evaluated.

6. Individual exercises: 10%.

Bibliography

a. Basic references

- BRENNAN, J. G. (2006). Manual de procesado de los alimentos. Ed. Acribia. Zaragoza.
- CHEFTEL, J.C. (2000). Introducción a la bioquímica y tecnología de los alimentos. Vol. I i II. Editorial Acribia, Zaragoza.
- COENDERS, A. (1996) Química Culinaria. Ed. Acribia. Zaragoza.
- FELLOWS, P. (1994) Tecnología del procesado de los alimentos. Editorial Acribia, Zaragoza.
- JEANTET, R.; GROGUENEC, T.; SCHUCK, P.; BRULÉ, G. (2010). Ciencia de los alimentos. Volumes. 1 i 2. Ed. Acribia. Zaragoza.
- ORDÓÑEZ PEREDA, J.A. (1998). Tecnología de los alimentos. Vol. I i II, Síntesis, D. L., Madrid.

b. Other references:

- BELLO, J. (1998) Ciencia y Tecnología Culinaria. Ed. Díaz de Santos. Madrid.
- CANDELA, M. ASTIASARAM, I. (1999) Alimentos: composición y propiedades. Ed. Eurograf. Pamplona.
- CASP VANACLOCHA, A. (2003) Procesos de conservación de alimentos. Ed. Mundi-Prensa, Madrid.
- VACLAVIK, V.A. (1998) Fundamentos de ciencia de los alimentos. Ed. Acribia, Zaragoza.
- HODGES CA. (1994) Culinary nutrition for food professionals. 2ª ed. Van Nostrand Reinhold. New York.
- KOTSCHEVAR LH. (1988) Standards, Principles and Techniques in quantity food production. 4ª ed. Van Nostrand Reinhold. Nova York.