



Universitat de Lleida

# DEGREE CURRICULUM **FOOD PROCESSING**

Coordination: SOLIVA FORTUNY, ROBERT CARLES

Academic year 2022-23

Subject's general information

<b>Subject name</b>	FOOD PROCESSING			
<b>Code</b>	100609			
<b>Semester</b>	2nd Q(SEMESTER) CONTINUED EVALUATION			
<b>Typology</b>	Degree	Course	Character	Modality
	Bachelor's Degree in Human Nutrition and Dietetics	2	COMPULSORY	Attendance-based
<b>Course number of credits (ECTS)</b>	6			
<b>Type of activity, credits, and groups</b>	<b>Activity type</b>	PRALAB	PRAULA	TEORIA
	<b>Number of credits</b>	1.6	1.4	3
	<b>Number of groups</b>	4	3	2
<b>Coordination</b>	SOLIVA FORTUNY, ROBERT CARLES			
<b>Department</b>	FOOD TECHNOLOGY, ENGINEERING AND SCIENCE			
<b>Teaching load distribution between lectures and independent student work</b>	On-site hours 60 - Lectures 30 - Practice and tutorials 16 - Seminars 14  Off-site hours 90			
<b>Important information on data processing</b>	Consult <a href="#">this link</a> for more information.			
<b>Language</b>	Catalan			

Teaching staff	E-mail addresses	Credits taught by teacher	Office and hour of attention
CLIVILLE SISO, JOAN JOSEP	joan.cliville@udl.cat	4,4	
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SOLIVA FORTUNY, ROBERT CARLES	robert.soliva@udl.cat	6,8	

## 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

### Specific skills

CE10 Knowing the basic processes in the elaboration, transformation and preservation of the main foods.

CE11 Knowing and applying the fundamentals of sensory analysis of food products.

CE14 Knowing the culinary techniques to optimize the organoleptic and nutritional characteristics of food, with respect to traditional gastronomy.

### General skills.

CG4. Communicate effectively, both orally and in writing, with people, health professionals or industry and the media, knowing how to use information and communication technologies, especially those related to nutrition and lifestyle habits.

CG5. Know, critically evaluate and know how to use and apply the sources of information related to nutrition, food, lifestyles and health aspects.

### Basic skills

CB2 The students have to know how to apply their knowledge to their work or vocation in a professional manner and possess the competencies and the skills that are usually demonstrated through the development and defense of arguments and problem solving within their field of study.

CB3 That students have the ability to gather and interpret relevant data (usually within their area of study) to make judgments that include a reflection on relevant social, scientific or ethical issues.

CB4 The students have to be able to transmit information, ideas, problems and solutions to both specialized and non-specialized audiences.

CB5 The students have to developed those learning skills necessary to undertake further studies with a high degree of proficiency undertaking further studies with a high degree of autonomy.

### Transversal Competences of the UdL

CT1 To have a correct oral and written expression

CT3 Mastering ICT

CT4 Acquire basic knowledge of entrepreneurship and professional environments.

CT5. To acquire essential notions of scientific thinking.

## Subject contents

1. **Introduction to food processing.**
2. **Preparative operations and transformation of raw materials.**
3. **Food preservation by thermal means.**
4. **Novel technologies as an alternative to conventional thermal treatments.**
5. **Preservation through water activity reduction.**
6. **Use of chemical substances**
7. **Preservation using low temperatures**
8. **Modified atmosphere packaging**
9. **Introduction to culinary cooking**
10. **Boiling and steaming**
11. **Frying**
12. **Grilling and roasting**
13. **Other cooking techniques**

## 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

Each student is assigned to a seminar group. Seminars 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 small groups. 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.

Due to the special circumstances derived from sanitary crisis caused by the COVID-19, this subject will be taught through on-site and off-site classes. As long as circumstances allow it, exams, seminars, practical activities and some plenary lectures will be carried out as on-site activities. If circumstances require a modification in the degree of on-site sessions, this will be informed in due time.

## Development plan

**On-site (40%)**

**Off-site (60%)**

## Evaluation

**1. Project: 10%.**

**2. Written test I (individual): 35%.**

**3. Written test II (individual): 35%.**

In order to average the other qualifications, a qualification above 5 is required for the average of the two 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: 5%.**

Due to the special circumstances derived from the health crisis caused by Covidien-19, some of the skills assessed in written tests may be assessed through individual activities and exercises. In the event that the circumstances evolve towards a change in the degree of attendance, it will be reported in due course.

## 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. (2007) 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.
- MÉRIDA, J. (2014). PROCESADO DE ALIMENTOS. AMV Ediciones. Madrid.
- 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. 4<sup>a</sup> ed. Van Nostrand Reinhold. Nova York.