



Universitat de Lleida

DEGREE CURRICULUM
**FOOD PHYSICS AND
CHEMISTRY I**

Coordination: BALCELLS FLUVIA, MERCE

Academic year 2019-20

Subject's general information

Subject name	FOOD PHYSICS AND CHEMISTRY I			
Code	102220			
Semester	1st Q(SEMESTER) CONTINUED EVALUATION			
Typology	Degree	Course	Character	Modality
	Bachelor's Degree in Food Science and Technology	2	COMPULSORY	Attendance-based
Course number of credits (ECTS)	6			
Type of activity, credits, and groups	Activity type	PRALAB	PRAULA	TEORIA
	Number of credits	2	0.6	3.4
	Number of groups	4	1	1
Coordination	BALCELLS FLUVIA, MERCE			
Department	CHEMISTRY			
Important information on data processing	Consult this link for more information.			

Teaching staff	E-mail addresses	Credits taught by teacher	Office and hour of attention
BALCELLS FLUVIA, MERCE	merce.balcells@udl.cat	4	
BATLLE AIXALA, MARC LLORENÇ	marc.batlle@udl.cat	1,2	
SANS BADIA, ALBERTO	albert.sans@udl.cat	2,8	
TORREGROSA GARCIA, RUBEN	ruben.torregrosa@udl.cat	4	

Learning objectives

The student must be able to:

- Make proper use of the theoretical concepts of the subject.
- Know how to use theoretical information to understand the function of the different ingredients in foods.
- Know the chemical reactions in which the components of foods can participate, know how to prevent or enhance these reactions or how to use them and their effects on the finished product.
- Know the physicochemical foundations that explain the behavior of food components, the characteristics of their transformations and processing.

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- Use correctly the theoretical concepts of the subject.
- Know how to use the theoretical information to understand the function of the different ingredients in foods.
- Know the chemical reactions in which the components of foods can participate, such as preventing or enhancing them or using them and their effects on the finished product.
- Know the physicochemical foundations that explain the behavior of food, the characteristics of its transformation and its processing.

Subject contents

1.- Introduction

- 2.- Carbohydrates: mono and oligosaccharides
- 3.- Carbohydrates: polysaccharides.
- 4.- Lipids: lipid components of foods.
- 5.- Chemical transformations in lipids
- 6.- Amino acids and oligopeptids. Use in foods.
- 7.- proteins. Use in foods. Chemical modifications of food proteins.
- 8.- Enzymes. Use in foods.

Lab activities

- 1.- Enzymatic browning reactions. Factors that modify the process.
- 2.- Maillard's reaction. Parameters of the reaction.
- 3.- Food hydrocolloids. Behavior of different food starches.
- 4.- Lipids. Oxidation of fats in food.
- 5.- Proteins. Properties of different proteins used in food.

Methodology

Activity	Description	On class dedication (hours)	Student dedication (hours)	Evaluation (hours)	Total Hours	ECTS
Class lessons	Class	34	68	4	106	4.2
Problem solving	Class	6	6	2	14	0.6
Laboratory	Lab practice	20	10		30	1.2
Total		60	84	6	150	6

Evaluation

Activity	Evaluation activity	Number	Marks (%)
Class lessons	Written exam	2	60
Laboratori	Lab report	1	20
Activitats dirigides	Report	1	20
Total			100

Bibliography

FENNEMA, O.R. - 1993 -. Química de los alimentos - Acribia S.A.

BADUI DERGAL, S. .-2006.- Química de los Alimentos, 4ª edición – Pearson Educación – Addison Wwesley

BELITZ, H.D.: GROSCH, W. - 2009 -. Química de los alimentos – Springer

COULTATE, T.P. - 1986 -. Alimentos. Química de sus componentes – Acribia

de_MAN J.M. -1990-. Principles of Food Chemistry - Van Nostrand Reinhold

CHEFTEL, J.C.: CHEFTEL, J.L.: BESANÇON, P. - 1982 -. Introducción a la bioquímica y tecnología de los alimentos – Acribia

ALAIS, C.: LINDEN, G. - 1990 -. Manual de bioquímica de los alimentos – Masson

MONDY, N.L.- 1980 -. Experimental Food Chemistry - Avi Publishing

HEIMANN, W. - 1980 -. Fundamentals of Food Chemistry - Ellis Horwood

BASSIC SYMPOSIUM SERIES - 1985 -. Chemical changes in food during processing – AVI

MCRAE, R. - 1993 -. Encyclopedia of food science, technology and nutrition - Academic Press