

SYLLABUS

Code-Course	051103- Food chemistry		
Thematic Area	Chemistry	Year	First
Course Type	Mandatory	Credits	6 cr. ECTS
In-class Hours	60 hours	Hours of Individual Work	90 hours

BRIEF COURSE DESCRIPTION

This course allows students to know the structures, reactions and properties of the main groups of compounds of interest for food and food technologies; as well as the necessary vocabulary. Students will also learn to interpret scientific literature.

Students will plan, organize, manage and control the different types of food productions, they will understand the chemical vocabulary and they will associate the modifications occurred to foods with chemical phenomenon.

In addition, they will study the main modifications and reactions occurred to foods during their preparations and their effects on the technological, nutritional and sensory quality.

BASIC SKILLS

BS1 – Students must demonstrate knowledge and understanding in a study field based on secondary school and that relies on advanced textbooks and includes some aspects that imply knowledge about the vanguard of it.

SPECIFIC SKILLS

SS14 – Understand the chemical structures, properties and transformations of the components of foods.

SS25 – Know the physical, chemical and nutritional properties of raw products and foods.

LEARNING OBJECTIVES

SYLLABUS

- Consolidate and expand the knowledge of Chemistry (Organic and inorganic) acquired in the secondary education necessary to understand the properties of products based on chemical structures. Relational properties and functions with structure of existing products in food.
- Know the chemical causes of the modifications of the components of food produced during processing and storage.
- Know the chemical reactions that take place in culinary processes.
- Know the chemical composition of food, its properties and nutritional value.
- Identify the different types of biomolecules.
- Know the relationships between chemical structure and biological function.
- Know the main food additives and their aroma.
- Understand the role and functions of enzymes in their regulation.

THEMATIC CONTENTS

1. Introduction
2. Basic concepts
 - 2.1. Atoms, molecules and functions
 - 2.2. Properties and reactions
3. Integrated study of models
 - 3.1. Water, ice and ice creams
 - 3.2. Fats and oils
 - 3.3. Bread
 - 3.4. Egg
 - 3.5. Oils and fats

LEARNING METHODOLOGY

SYLLABUS

This course combines lectures (40h), workshops (16h), laboratory practices (4h) and a group assignment.

ASSESSMENT SYSTEM

The assessment system assesses the student's achievement of learning outcomes regarding the subject's own competences.

Students may choose between continuous assessments throughout the year or a final examination at the end of the course.

Continuous assessment: the teaching-learning process is assessed by a continuous monitoring of the work done by the students throughout the course.

Final examination: it assesses the students' learning outcomes by means of a final exam at the end of the course. Students who cannot come to class regularly due to justified reasons will be assessed at the end of the course.

Assessment systems	Continuous	Final
Mid-term written exams I-II	20 %	40 %
Mid-term written exams III	50 %	
Activities from the workshop	10 %	
Group assignment	20 %	---
Final written exam	---	60 %

Review and Reassessment of the Course

The student has the right to review all the evidences that have been designed for the assessment of learning.

If a student fails to achieve the learning objectives of the course, in order to opt for the reassessment of the course and submit a new reassessment task, it will be mandatory to fulfil one of these conditions:

SYLLABUS

A) Students must have been awarded a mean grade of 5.0 or higher in relation to the activities carried out throughout the semester without taking into account the final exam/s (both continuous assessment and single assessment) and having attended the final exam.

B) Students must have been awarded a final minimum grade of 4.0 in the overall course.

After the reassessment, the maximum grade is 5.0 in the overall course.

BIBLIOGRAPHY

Blei I, Odian G. (2006) *General, Organic, and Biochemistry. Connecting Chemistry to your life*". 2on Ed. W.H. Freeman and Company, New York.

Bettelheim FA, Campbell MK, Farrell SO, et al. (2013) *Introduction to Organic and Biochemistry*". 8a ed. Brooks/Cole Cengage Learning. . Pacific Grove, Calif.

This H. (2013) *De la ciencia a los fogones*. Acribia. Zaragoza.

This H. (1996) *Los secretos de los pucheros*. Acribia. Zaragoza.

This H. (2005) *Cacerolas y tubos de ensayo*. Acribia. Zaragoza

Fennema O.R. (2010) *Química de los alimentos*. 3ª ed. Acribia. Zaragoza.

Belitz H.D., Grosch W., Schieberle P. (2011) *Química de los alimentos* . Acribia. Zaragoza.

Lister T. (2005) *Kitchen chemistry*. Royal Society of Chemistry. London.