

## 30811 - Food chemistry and biochemistry

### Información del Plan Docente

<b>Academic Year</b>	2016/17
<b>Academic center</b>	105 - Facultad de Veterinaria
<b>Degree</b>	568 - Degree in Food Science and Technology
<b>ECTS</b>	6.0
<b>Course</b>	2
<b>Period</b>	First semester
<b>Subject Type</b>	Compulsory
<b>Module</b>	---

### **1.Basic info**

#### **1.1.Recommendations to take this course**

#### **1.2.Activities and key dates for the course**

### **2.Initiation**

#### **2.1.Learning outcomes that define the subject**

#### **2.2.Introduction**

### **3.Context and competences**

#### **3.1.Goals**

#### **3.2.Context and meaning of the subject in the degree**

#### **3.3.Competences**

#### **3.4.Importance of learning outcomes**

### **4.Evaluation**

### **5.Activities and resources**

#### **5.1.General methodological presentation**

Food Chemistry and Biochemistry had a 60 hours charge of which 55 correspond to lectures. In addition to theoretical teaching two activities are planned. A practice to develop within the expected time

for this subject (the rest of practical learning will be done seamlessly with the subjects of Analysis Food Chemistry and Physical and Sensory Food Analysis) consists of the olfactory examination of different aromatic substances, in order to appreciate the characteristic odors described in lectures, differentiate different types of aromas and appreciate the qualities of differential nominally similar aromas. Two food processing industries are also visited. They students will see in practice development of processes and the influence of chemical and biochemical aspects in them. The visits will be

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coordinated with

teachers of other subjects that also perform, to avoid duplication and improve utilization. With one small exception, the practical work of this subject will be coordinated with the subjects of Food Chemical Analysis and Physical and Sensory Food Analysis, so that materials whose preparation would be subject to practical biochemistry (eg, obtaining different polysaccharide gels) are to

It turns the material used to make the practices of physical analysis, and evaluation of the effect of conditions means on the Maillard reaction or reactions lipid oxidation (biochemistry) are the subject of chemical analysis practices.

Learning activities planned (program included) The program that the student is offered to help you achieve the expected results includes the following activities.

### 5.2.Learning activities

As learning activities the lecture, discussion and analysis of actual cases, will be used, and also visits to industries

### 5.3.Program

The website address is <http://milksci.unizar.es/bioquimica/uso.html> contains the detailed program

of the subject.

Chapter I: Introduction

TOPIC 1: INTRODUCTION TO FOOD BIOCHEMISTRY

TOPIC 2: THE WATER IN FOOD

Chapter II: Enzymes in food

TOPIC 3: ENDOGENOUS ENZYMES IN FOOD

TOPIC 4: USE OF ENZYMES ALIMENTARIA INDUSTRY

Chapter III: Carbohydrates

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TOPIC 5: MONOSACCHARIDES, OLIGOSACCHARIDES AND THEIR DERIVATIVES

TOPIC 6: STARCH AND ITS DERIVATIVES

TOPIC 7: INDIGESTIBLE POLISACCHARIDS IN FOOD: CELLULOSE AND PECTINS

TOPIC 8: INDIGESTIBLE POLISACCHARIDS FROM OTHER SOURCES

TOPIC 9: MODIFICATION AND ALTERATIONS OF CARBOHYDRATES

Chapter IV: Lipids

EMA 10: CLASSIFICATION AND PHYSICO-CHEMICAL PROPERTIES OF LIPIDS

UNIT 11: PHYSICAL PROPERTIES OF LIPID: CRYSTALLIZATION AND MELTING

TOPIC 12: LIPID ALTERATION

TOPIC 13: CHEMISTRY OF INDUSTRIAL PROCESSING OF FATS

Chapter V: Proteins

TOPIC 14: STRUCTURE AND PHYSICAL AND CHEMICAL PROPERTIES OF PROTEINS

TOPIC 15: ALTERATIONS AND MODIFICATIONS OF PROTEIN: DESNATURALIZACIÓN

TOPIC 16: OTHER ALTERATIONS AND MODIFICATIONS OF PROTEIN

TOPIC 17: FUNCTIONAL PROPERTIES OF FOOD PROTEINS

TOPIC 18: THE MUSCLE PROTEIN SYSTEM

TOPIC 19: MILK PROTEINS

TOPIC 20: EGG PROTEINS

TOPIC 21: VEGETABLE PROTEINS

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Chapter VI: Vitamins and minerals

TOPIC 22: VITAMINS IN FOOD

TOPIC 23: MINERALS IN FOOD

Chapter VII: Other constituents of food

24 TOPIC: NATURAL PIGMENTS IN FOOD

TOPIC 25: ENZYMATIC BROWNING

TOPIC 26: GENETICALLY MODIFIED FOODS

TOPIC 27: FOOD COMPONENTS OF FLAVOR AND AROMA

TOPIC 28: FOOD ADDITIVES

TOPIC 29: BIOACTIVE SUBSTANCES IN FOOD

### 5.4.Planning and scheduling

### 5.5.Bibliography and recommended resources

BB Coultate, Tom. Food : the chemistry of its components / Tom Coultate . 6th ed. Cambridge, UK : Royal Society of Chemistry, cop. 2016

BC Fennema's food chemistry / [edited by] Srinivasan Damodaran, Kirk Parkin, and Owen R. Fennema. . - 4th ed. Boca Raton : Taylor & Francis, 2007.

BC Velisek, Jan. The chemistry of food / Jan Velisek. . Chichester : John Wiley & Sons, 2014.