



Course Syllabus

2012-2013

1. COURSE DESCRIPTION

Undergraduate Degree:	Human Nutrition and Dietetics
Combined Undergraduate Degree:	
Subject:	Bromatology
Module:	Food Sciences
Department:	Molecular Biology and Biochemical Engineering
Academic Year:	2012-2013
Semester:	First Semester
ETCS:	6
Year:	Second Year
Typology:	Compulsory Subject
Language:	Spanish

Typology of teaching:	B1
a. EB:	60%
b. EPD:	40%
c. AD:	0



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2. TEACHING TEAM

2.1. Person responsible for the subject	Isabel Cerrillo García
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2.2. Lecturer	
Name:	Isabel Cerrillo García
Centre:	Faculty of Experimental Sciences
Department:	Molecular Biology and Biochemical Engineering
Area:	Nutrition and Bromatology
Category:	Senior Lecturer
Office Hours:	Tuesdays 9:00-12:00 and Thursdays 12:00-15:00.
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3. SITUATION WITHIN THE TRAINING PLAN

3.1. Course Objectives

The main aim of the Bromatology course is the knowledge of all general aspects that affect food, such as classification, chemical composition, physical-chemical properties and nutritional value depending on its processing and obtaining sources. This course will also provide basic knowledge to assess the quality and the alterations that modify the food.

Specifically, we aim to achieve the following learning outcomes:

1. To be able to differentiate the different food groups.
2. To know the main components of each food groups and their nutritional value.
3. To be able to understand what are the processes and mechanisms that affect food spoilage and how to prevent it.
4. To be able to use easily databases and food composition tables.
5. To know the main sources of information on food.

3.2. Contributions to the Training Plan

The Bromatology is essential for a Dietitian-Nutritionist, since as experts in nutrition they must know the composition of foods and their nutritional value. Furthermore, it is important to the dietitian-nutritionist to know the alterations that occur in food and their effect on the nutritional value and food security. This knowledge is important in all professional fields: clinical dietitian, researcher or belonging to the industry.

3.3. Necessary Previous Knowledge

Previous knowledge is not required to take this course. However, it is advisable that students have passed the following subjects of the first year: "Biochemistry" and "Applied Chemistry".

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4. SKILLS

4.1 Skills developed through this course

1. Possession and understanding of forefront knowledge of their area of study, from basic to advanced levels.
2. Ability to apply knowledge in their work area, with the ability also to prepare and defend arguments as well as to solve problems.
3. Capacity to gather and interpret relevant data to make judgments derived from a reflection on relevant social, ethical or scientific issues.
4. Ability to analyze and synthesize.
5. Capacity to present information in written and oral form.
6. Critical capacity.

4.2. Skills module developed through this course

1. To identify and to classify food and food products. To know the chemical composition, the physical-chemical and functional properties as well as the nutritional value, the bioavailability and the organoleptic characteristics of food and food products.
2. To know and to apply the fundamentals of sensory analysis of food products.
3. To interpret and to manage food composition tables.
4. To manage public and private databases about food composition.
5. To be able to analyze and synthesize as well as to present information in oral and written form.
6. To acquire information management and knowledge expression skills.
7. To be able to plan and to manage time.

4.3 Specific skills of this course

1. To know the definition and classification of food in terms of the Bromatology.
2. To know the chemical composition of foods and their physical-chemical and functional properties.
3. To know what is the major compound in the different foods.
4. To determine the nutritional value of the foods, their bioavailability, their organoleptic characteristics and the modifications suffered as a result of technological and culinary processes.
5. To know the factors that affect food and the processes needed to avoid them.

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5. COURSE OUTLINE

THEORETICAL CLASSES

The theoretical content of the Bromatology course consists of 14 units distributed into 4 blocks:

Block 1: GENERAL ASPECTS:

Unit 1. - INTRODUCTION TO BROMATOLOGY. FOOD AND FOOD QUALITY.
SENSORY PROPERTIES OF FOOD.

1. Concept of Bromatology and other Food Sciences.
2. Historical Background.
3. Definition of food.
4. Components and functions of foods.
5. Legal classification of foods.
6. Types of marketed foods.
7. Definition of food quality.
8. Quality assessment.
9. Sensory attributes.
10. Sensory threshold.
11. Compounds responsible for the color, taste, smell, texture and flavor.

Unit 2. FOOD COMPOSITION TABLES.

1. What are Food Composition Tables?
2. Preparation of Food Composition Tables.
3. Content of Food Composition Tables.
4. Advantages and limitations of Food Composition Tables.
5. Variability factors.
6. Common mistakes.
7. Food labelling.

Unit 3. - FOOD STABILITY AND TYPES OF ALTERATIONS.

1. Food stability.
2. Physical alterations of food.
3. Microbiological alterations of food.
4. Chemical and biochemical alterations of food.
5. Impact on food quality.
6. Prevention measures.

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Unit 4. - FOOD ADDITIVES

1. Definition of additive.
2. Classification.
3. Purpose and justification for the use of additives.
4. Authorization of additives.
5. Assessment of food additive safety.
6. Additives that improve the organoleptic properties.
7. Additives that prevent or delay alterations of food.
8. Foods that improve texture.
9. Other additives.

Block 2: FOOD OF ANIMAL ORIGIN

Unit 5. - MEAT, FISH AND SEAFOOD

1. Introduction.
2. Chemical composition.
3. Nutritional value.
4. Transformation of muscle into meat.
5. Organoleptic properties.
6. Viscera and meat derivatives.
7. Post mortal process in fish.
8. Estimation of the extent of fish alteration.
9. Forms of consumption and conservation.
10. Seafood.

Unit 6. - EGGS AND EGG PRODUCTS.

1. Introduction.
2. Structure and chemical composition.
3. Nutritional value.
4. Changes during storage.
5. Conservation techniques.
6. Classification and traceability.
7. Functional properties.
8. Manufacture of egg products.

Unit 7. - MILK AND DAIRY PRODUCTS

1. Definition.
2. Physical-chemical properties.
3. Chemical composition and structure.
4. Nutritional value.
5. Milks for consumption.
6. Dairy products: fermented milk, cheese, cream and butter.

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Block 3: FOOD OF PLANT ORIGIN

Unit 8. - LEGUMES AND DERIVATIVES.

1. Definition.
2. Chemical composition.
3. NUTRITIONAL VALUE.
5. Undesirable compounds from a nutritional standpoint.

Unit 9. - CEREALS AND DERIVATIVES

1. Structure and nutritional composition of the cereal grain.
3. Wheat, flour and derivatives.
4. Rice and its milling products.
5. Maize and its use in nutrition.

Unit 10. - VEGETABLES AND TUBERS

1. Introduction.
2. Classification.
3. Chemical composition.
4. Nutritional value.
5. Possible presentations of vegetables.

Unit 11. - FRUITS AND NUTS

1. Introduction.
2. Chemical composition.
3. Ripening process of fruits.
4. Nutritional value.
5. Nuts. Nutritional composition and their importance in nutrition.

Block 4: OTHER GROUPS OF FOODS

Unit12. - EDIBLE OILS AND FATS

1. Introduction.
2. Physical-chemical properties.
3. Animal fats.
4. Vegetable fats.
5. Processed fats.

Unit 13. - STIMULATING FOODS: COFFEE, TEA, COCOA AND CHOCOLATE

1. Introduction.
2. Coffee.
3. Tea.
4. Cocoa.
5. Chocolate.

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Unit 14. - NON-ALCOHOLIC AND ALCOHOLIC DRINKS

1. Water.
2. Soft drinks.
3. Beer.
4. Wine.
5. Distilled drinks.

Unit 15. - DIETETIC, FORTIFIED AND FUNCTIONAL FOODS

1. Introduction.
2. Dietetic and fortified foods.
3. Origin and definition of functional food.
4. Types of functional foods.

PRACTICAL CLASSES

The practical part of the Bromatology course will consist in 5 sessions:

Practice 1: Management of food composition tables.

Practice 2: Food alteration: enzymatic and non-enzymatic browning reaction.

Practice 3: Structure of egg and effects of ageing on egg.

Practice 4: Determination of parameters of milk: Fresh cheese making.

Practice 5: Determination of parameters of fruits and derivatives.

6. METHODOLOGY AND RESOURCES FOR TEACHING

The theoretical part of Bromatology course will be taught according to the following methodology:

- Presentation in class about knowledge, concepts and procedures related to the theoretical content. This presentation will be made in a participatory way.
- Performing a serie of activities about the theoretical contents of the course. These activities will be carried out both individually and in groups.

The practical content of the Bromatology course will be taught in groups of 20 students, according to the following methodology:

- Realization of practices, most of them in laboratory. These practices complement the theoretical content of each of the course blocks.

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7. GRADING

The subject assessment will be continuous and all the formative activities carried out throughout the course will be taken into account.

GENERAL CONSIDERATIONS:

1.- First of all, attendance at all practices is mandatory to pass the course. Without this, students will not be assessed.

2.-As a rule: if a student cannot attend one of the practices, for an absolutely justified reason, he/she shall make a work on the content of that practice, equivalent to the expected duration of the this practice. The no attendance of more practices (even for a justified reason) will involve that the student will not be assessed.

The final grade will be determined using the following aspects:

1. Theoretical knowledge. WEIGHT 50%

Criteria:

- Acquisition and mastery of the theoretical knowledge of the subject.

Instruments:

- A theoretical written examination will be held at the end of the course (1st call: January 26, 2nd call: June 29).

2. Practical knowledge. WEIGHT 30%

Criteria:

- Acquisition and mastery of the practical skills of the subject.

- Carrying out of the practical sessions:

- Participatory attitude.

- Handling of the practices materials.

- Adaptation and interpretation of results.

Instruments:

- Teacher notes and observations.

- A test on practical fundamentals to be performed previous to the practice session (15%).

- A practical writing examination to be held at the end of course together with the theoretical exam (15%).

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3. Assessments throughout the course. WEIGHT 20%

Criteria:

- Continuous acquisition of theoretical and practical knowledge throughout the course.

Instruments:

- Four evaluations based on multiple choice exams conducted throughout the course.

Attendance, participation and office hours.

A total of 1 point can be added to the final grade to these students who having approved Bromatology, have regularly attended class with a participative attitude and come to office hours, showing interest in the subject.

The course final grade will be the sum of the grades obtained for each of the preceding points, taking into account their corresponding weights. To pass the course, the student has to obtain a grade equal to or higher than 5 in both theoretical and practical part of the subject.

8. GENERAL BIBLIOGRAPHY

- Bello Gutiérrez J (2000). Ciencia bromatológica: Principios generales de los alimentos. Editorial Díaz de Santos, Madrid.
- Ángel Gil (2010). Tratado de nutrición. Volumen II. Composición y calidad nutritiva de los alimentos. 2ª ed. Editorial Médica Panamericana, Madrid.
- Ordóñez JA, Camberro MI, Fernández L, García ML, García de Fernando G, de la Hoz L, Selgas MD (1998). Tecnología de los alimentos. Componentes de los alimentos y procesos. Volumen II Alimentos de origen animal Editorial Síntesis, Madrid.
- KuKlinski CI. (2003). Nutrición y Bromatología. Editorial Omega, Barcelona.
- CESNID (2008). Tablas de composición de alimentos por medidas caseras de consumo habitual en España + CD-ROM. Editorial McGraw- Hill.
- Mataix Verdú J (2009). Tabla de composición de alimentos 5ª edición. Editorial Universidad de Granada.