

Subject Guide  
BROMATOLOGÍA

MODULE	CONTENT	YEAR	TERM	CREDITS	TYPE
Science of Food	Bromatología	2º	1º	6	CORE
<b>LECTURER(S)</b>			<b>Postal address, telephone nº, e-mail address</b>		
<b>Dr. MANUEL OLALLA HERRERA</b>			Dpto. Nutrición y Bromatología. School of Pharmacy. olalla@ugr.es		
<b>DEGREE WITHIN WHICH THE SUBJECT IS TAUGHT</b>					
<b>Degree in Science and Food Technology</b>					
<b>PREREQUISITES and/or RECOMMENDATIONS (if necessary)</b>					
Having studied the subjects of General Chemistry, Biochemistry, Physiology, Biology, Chemistry and Biochemistry of food, Commodity Production, Unit Operations in Industry					
<b>BRIEF ACCOUNT OF THE SUBJECT PROGRAMME (ACCORDING TO THE DEGREE)</b>					
<ul style="list-style-type: none"> <li>• Classification and descriptive study of the composition, properties and nutritional value of foods of animal origin.</li> <li>• Composition and properties of other foods: canned, prepackaged and precooked dishes.</li> <li>• Food, cultural identity and social differentiation</li> </ul>					
<b>GENERAL AND PARTICULAR ABILITIES</b>					
<p>CT1. Ability to express themselves properly in Spanish in their disciplinary field.  CT2. Problem solving.  CT3. Teamwork.  CT4. Ability to apply theoretical knowledge to practice.  CT7. Capacity for analysis and synthesis.  CT8. Critical Thinking.  CT9. Develop skills introduction to research.  CT10. Motivation for quality.  CT11. Capacity for organization and planning  CT12. Ability to manage information.  CT14. Sensitivity to environmental issues.  CE2. Meet the models of food production, composition and physical properties, physic-chemical and chemical to determine its nutritional value and functionality.  CE3. Learn the techniques and food analysis to ensure optimal conditions for human consumption.  CE11. Understand and appreciate that food is one of the cornerstones of the cultural identity of a society.  CE15. Inform, train and give advice to legal, scientific and technical public administration, the food industry and consumers in order to design intervention strategies and training in the field of science and</p>					



food technology.

### OBJECTIVES (EXPRESSED IN TERMS OF EXPECTED RESULTS OF THE TEACHING PROGRAMME)

- Use knowledge gained about the chemical composition and properties of food, food analysis, detection of fraud and its alterations, processing, preservation and evaluation of the quality of food of animal origin.
- Ability to describe and explain the changes in food due to the processes of production, conservation and deterioration.

### DETAILED SUBJECT SYLLABUS

#### THEORETICAL AGENDA:

Item 1. - Food Science. Concept. Objectives. Current status and prospects. Concept of food, nutrient and food products. Legal definitions. Spanish food law. Spanish Food Code. EU Directives and International. Novel Foods (nutritional and technological innovations).

Item 2. Culture and food. Concept of food, culture and eating behavior. Socio-cultural functions of food. Historical bases of power. Major changes in the various stages. Causes and consequences. Influence of the discovery of America and other geographical discoveries in the current supply. Incorporation of new foods to the Western diet.

Item 3. - Novel Foods. Introduction, general characteristics. Nutritional concepts and applications. New Food: writing techniques. Examples: Functional Foods, GMO, Novel Foods, etc..

Item 4. - Food Preservation: General principles. Physical methods of preservation: Application of cold and heat to food preservation. Drying, dehydration and lyophilization. Ionizing radiation. Applications.

Chemical methods of preservation. Salting, smoking, brining, pickling. Natural chemical preservatives: vinegar, sugar and alcohol. Additives (Chemical Preservatives).

Item 5. - Meat and meat products. Legal definitions and qualitative. Meaning in the diet. Production and consumption data. Histological structure of muscle. Chemical composition. Technological properties. Post-mortem changes. Nutritional value. Legal criteria, analytical, sensory, health and quality.

Technology of meat processing: the conservation and marketing them. Meat Products and Derivatives: Legal Classifications, treatment and process technology. Offal.

Item 6. - Fish: Species of consumption. Seafood and shellfish consumption in food meaning. Data Production and Consumption. Composition. Nutritional Value. Legal criteria, analytical, sensory quality and health. Major degradation rates. Styles and conservation: Legal definitions, process technology. Derived from fish. Surimi.

Item 7. - Egg. Definition and importance in the diet. Structure and chemical composition. Nutritional value. Legal criteria, analytical and quality health care and classification. Egg: Definitions and processes.

Item 8. - Milk: Definitions, types and importance in the diet. Production and Consumption. Structure and chemical composition. Nutritional value. Milk, nutritional importance. Basic technological operations: collection, sterilization, homogenization, preservation methods (pasteurization, sterilization, freezing).

Types of milk: milk consumption, preserved (evaporated, condensed and powdered). Fermented milks and modified. Concept of probiotic and prebiotic. Chemical and biochemical modifications, nutritional applications, types, technological processes of processing and marketing.

Item 9. - Dairy products: Cream. Butter. Curd. Ice cream. Dairy desserts, cheeses. Legal definitions. Classifications. Chemical composition and nutritive value. Nutritional importance. Legal criteria, analytical, sensory and health. Technological processes of processing, preservation and marketing. Dairy products: procurement and applications.

#### AGENDA STUDY:



#### COMMERCIAL QUALITY OF FISH

- DETERMINATION OF THE DEGREE OF FRESHNESS
- DETERMINATION OF TOTAL VOLATILE BASIC NITROGEN

#### COMMERCIAL QUALITY EGG

- Freshness DEGREE (candling)
- LEGAL CLASSIFICATION

#### DETERMINATION OF NITRATE AND NITRITE IN CURED MEATS BY SPECTROPHOTOMETRY

#### ANALYSIS OF MILK

- DETERMINATION OF ADDED WATER: Density and freezing point
  - DETERMINATION OF LACTOSE (Official Method Chloramine T)
  - ANALYSIS OF FAT (Official Method Gerber)
  - ACIDITY
  - CHECKING THE HEAT (peroxidase and phosphatase)
  - PROOF OF THE REDUCTASE (methylene blue)
- #### DEVELOPMENT OF A FERMENTED MILK AND COMPOSITION

#### Bibliographic practices

- CONSULTATION AND USE OF THE BIBLIOGRAPHIC SOURCES  
SUBJECT: BOOKS, LAW, MAGAZINES, etc..

#### PRACTICE FIELD

Visit meat packing plants and dairy farms.

### READING

- ASTIASARAN y MARTINEZ. Alimentos Composición y propiedades. Ed. McCraww-Hill. Interamericana. 2000.
- BARROS, C. (Recopilador). Legislación Alimentaria. Alimentaria. Madrid. 1976- Actualizado con CD
- BELITZ. Química de los Alimentos. 2ª Edición. Ed. Acribia. 1997.
- BELLO GUTIERREZ, J. Ciencia Bromatologica. Ed. Diaz de Santos. 2000.
- BRENNAN, J. Las Operaciones de la Ingeniería de los Alimentos. 3ª Edición. Ed. Acribia. 1998.
- CENZANO. Nuevo Manual de Industrias Alimentarias.1993.
- CODIGO ALIMENTARIO ESPAÑOL. Ed. Textos legales. 1988.
- CHEFTEL, J.G. y col. Introducción a la bioquímica y tecnología de los alimentos.2000.
- FEHLEBER, K. Higiene Veterinaria De Los Alimentos. Ed. Acribia. 1998.
- FELLOWS,P. Tecnología del Procesado de Los Alimentos. Principios y Prácticas. Ed. Acribia. Zaragoza. 1993.
- FENNEMA, O. R.. Química de los Alimentos. Ed. Acribia. Zaragoza. 2000.
- GIL, A. Tratado de Nutrición. TOMO II. Composición y Calidad Nutritiva. 2005.
- HERNÁNDEZ, M. Tratado de Nutrición. Ed. Diaz de Santos.1999.
- HORST DIETER. Fundamentos de Tecnología de los Alimentos. Ed. Acribia. 2001
- LINDER, M.C. Nutrición. Aspectos Bioquímicos. EUNSA. 1996.
- MADRID, A. Reglamentaciones técnico sanitarias del sector alimentario. Ed. Madrid. 1988.
- MATAIX VERDU, J. Nutrición y Alimentación Humana. I. Nutrientes y Alimentos. Ed. Ergon. 2002.
- ORDOÑEZ y col. Tecnología de los alimentos. Vol. I y II. 1998.
- PAMPLONA, J.D. Enciclopedia De Los Alimentos Y Su Poder Curativo. 3 Tomos.
- POTTER y HOTCHKISS. Ciencia de los Alimentos. Ed. Acribia. 1999.



- PRIMO YUFERA. Química de los Alimentos. Ed. Síntesis. 1998.
- RANGEN, M.D. Manual De Industrias De Los Alimentos. Ed. Acribia. 1993.
- RODRÍGUEZ, F° (Editor). Ingeniería de la Industria Alimentaria. Tomo II y III. Ed. Síntesis. 2002.
- VOLLMER, G. Elementos de Bromatología descriptiva. Ed. Acribia. 1999.

#### **RECOMMENDED INTERNET LINKS**

[http://europa.eu.int/index\\_es.htm](http://europa.eu.int/index_es.htm).

<http://mapya.es/>.

<http://www.ine.es>.

<http://www.consumo-inc.es/home/home.htm>.

<http://www.seguridadalimentaria.org>

<http://www.fao.org>.

<http://www.fns.usda.gov/fns/>.

<http://www.cytali.org/tiki/tiki-index.php>.

<http://agrovia.com/>.

<http://www.us.es/acta/>.

<http://www.institutohuevo.com/scripts/index.asp>.

<http://geocities.com/paris/9282/cerveza.html>.

<http://elvino.com>.

<http://www.molineriaypanaderia.com/>.

<http://www.mercasa.es/>.

