

MODULE	CONTENT	YEAR	TERM	CREDITS	TYPE
Science of Food	Food Science	2º	1º	6	CORE
LECTURER(S)			Postal address, telephone nº, e-mail address		
<ul style="list-style-type: none"> Manuel Olalla Herrera 			Department of Nutrition and Food Science, 3rd floor, School of Pharmacy. email: olalla@ugr.es		
DEGREE WITHIN WHICH THE SUBJECT IS TAUGHT					
Degree in Science and Food Technology			http://www.ugr.es/~nutricion/pdf/tutorias1819.pdf		
PREREQUISITES and/or RECOMMENDATIONS (if necessary)					
Having studied the subjects of General Chemistry, Biochemistry, Physiology, Biology, Chemistry and Biochemistry of food, Commodity Production, Unit Operations in Industry					
BRIEF ACCOUNT OF THE SUBJECT PROGRAMME					
<ul style="list-style-type: none"> Classification and descriptive study of the composition, properties and nutritional value of foods of animal origin. Composition and properties of foods: canned, prepackaged and precooked dishes. Food, cultural identity and social differentiation 					
GENERAL AND PARTICULAR ABILITIES					
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.To meet the models of food production, composition and physical properties, physic-chemical and chemical to determine its nutritional value and functionality.
 CE3. To learn the techniques and food analysis to ensure optimal conditions for human consumption.
 CE11. To understand and appreciate that food is one of the cornerstones of the cultural identity of a society.
 CE15. To 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 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



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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.

PRACTICAL PROGRAM:

COMMERCIAL QUALITY OF FISH: Determination of the degree of freshness. Determination of the total volatile basic nitrogen.

COMMERCIAL QUALITY OF 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). Test of the reductase (methylene blue)

DEVELOPMENT OF A FERMENTED MILK. COMPOSITION

Bibliographic practices

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

PRACTICE FIELD

Visit meat packing plants and dairy farms.

READING

KEY REFERENCES

- BELLIDO GUERRERO D, DE LUÍS ROMÁN DA (2006). Manual de nutrición y metabolismo. Ed. Díaz de Santos, Madrid.
- CERVERA, (2004). Alimentación y dietoterapia (Nutrición aplicada en la salud y la enfermedad) 4ª Ed. Interamericana-McGraw-Hill.
- CESNID (2008). Tablas de composición de alimentos por medidas caseras de consumo habitual en España. Ed McGraw-Hill, Madrid.
- DUPIN H, CUQ J-L. MALEWIAK M, LEYNAUD-ROUAUD C, et BERTHIER (1997). La alimentación humana. Ed. Bellaterra Barcelona.
- GIL, A. (2010). Tratado de nutrición (Tomos II y III). Ed. Panamericana. Madrid.
- González Gallego J, Sánchez Collado P, Mataix Verdu J. (2011). Nutrición en el deporte: ayudas ergogénicas y dopaje (2011) Díaz de Santos: Fundación Universitaria Iberoamericana. Madrid
- MAHAN L K. Y ARLIN M. (2009). Nutrición y dietética de Krauser. 12ª ed. Elsevier Masson, Barcelona.
- MARTINEZ HERNÁNDEZ A, PORTILLO BAQUEDANO M DEL P (2011). Fundamentos teóricos-prácticos de nutrición y dietética. Ed. Panamericana. Madrid
- MELVIN H. W (2005). Nutrición para la salud, la condición física y el deporte. McGraw-Hill. México
- MINISTERIO DE SANIDAD Y CONSUMO (1995). Tablas de composición de alimentos españoles. Ed. Ministerio de Sanidad y Consumo. Secretaría General Técnica. Centro de Publicaciones, Madrid.
- MUÑOZ M. ARANCETA J. GARCÍA JALON I. (2004) Nutrición y dietoterapia. Ed. EUNSA. Ediciones



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Universidad de Navarra.

- RIBERO M (2003). Nuevo manual de dietética y nutrición. Ed. V. Madrid.
- SALAS-SALVADO J, BONADA A, TRALLERO R, SALÓ ME, BURGOS R (2008). Nutrición y dietética clínica. 2ª ed. Ed. Masson. Barcelona.
- SENC (2001). Guías alimentarias para la población española. IM y C, S.A. Madrid.
- VAZQUEZ C, DE COS AI, LOPEZ NOMDEDEU C (2005). Alimentación y nutrición. Manual teórico-práctico, 2ª ed. Díaz de Santos, Madrid

RECOMMENDED INTERNET LINKS

- <http://www.nutricioncomunitaria.org/>
- <http://www.senba.es/>
- <http://www.sennutricion.org/>
- <http://www.seedo.es/>
- <http://www.aecosan.msssi.gob.es/>
- <http://portalfarma.com>
- <http://fen.org.es> (Fundación Española de Nutrición)



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