

## NAME OF THE SUBJECT

MODULE	CONTENT	YEAR	TERM	CREDITS	TYPE
Food Science	Food analysis	2º	2º	6	Mandatory
LECTURER(S)			Postal address, telephone nº, e-mail address		
M <sup>a</sup> Luisa Lorenzo Tovar Rosa María García Estepa			Department of Nutrition and Food Science, 3rd floor, School of Pharmacy Phone number: 958 243864 / 958 243866 Email: <a href="mailto:mluisa@ugr.es">mluisa@ugr.es</a> , <a href="mailto:rgestepa@ugr.es">rgestepa@ugr.es</a>		
DEGREE WITHIN WHICH THE SUBJECT IS TAUGHT					
Food Science and Technology					
PREREQUISITES and/or RECOMMENDATIONS (if necessary)					
In particular this course requires previously successful completion of all the materials previously for the Common Basic Training module, and the subjects: Chemical Analysis, Commodity Production, Food Chemistry and Biochemistry and Food Science I and II.					
BRIEF ACCOUNT OF THE SUBJECT PROGRAMME (ACCORDING TO THE DEGREE ¿??)					
<ul style="list-style-type: none"> <li>• The food analysis: purposes, procedures. Types of analysis. Quality of analytical results.</li> <li>• Sensory analysis of foods.</li> <li>• Methodologies for quantification of the different nutrients of a food product, to evaluate other quality specifications and food quality control, detection of tampering, adulteration and fraud.</li> </ul>					
GENERAL AND PARTICULAR ABILITIES					
<p><u>General</u></p> <ul style="list-style-type: none"> <li>• The Basic Skills of University contained in the Agreement of the Andalusian Committee of the Degree in Science and Food Technology</li> </ul>					



### Specific

- Ability to correct handling of samples during sampling and preparation for analysis of different types of food
- To develop common and the most frequently analytical protocols used to detect alterations in food, adulteration and fraud.
- To acquire fluency in the use of official methods of analysis used in food.
- To understand the foundations and objectives of the sensory analysis.
- To understand its importance as a parameter of quality food and drinks.
- To analyze your interest in research, development and innovation of new foods.
- To study the standard conditions for the training of the panel and to perform the tests.
- To learn the most commonly used sensory testing.
- To initiate students on tests of sensory analysis.
- Ability to participate in sensory analysis tests.
- 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.
- Conduct Chemical analyzes, interpret results and write reports, take responsibility for issuing opinions related to the overall quality of the food samples.

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

The knowledge needed to analyze food, raw materials, ingredients, additives, etc., assess results and, where appropriate, propose actions for improvement.

#### DETAILED SUBJECT SYLLABUS

##### THEORY

- 1.- Introduction to Food Analysis. Overview. Food Law. Official controls.
- 2.- Determination of Water and dry. Problematic. Methods for drying. Methods by distillation. Chemical and physical methods. Measure of water activity. Applications.
- 3.- Determination of Protein and nitrogen compounds. Total nitrogen and nonprotein nitrogen. Applications. Amino acid composition. Determining the quality of the protein.



- 4. - Determination of Lipids. Extractable fat. Total fat. Fatty acid composition. Isolation and analytical study of the unsaponifiable. Physical and chemical indexes. Applications.
- 5. - Determination of Carbohydrate. Carbohydrates total usable. Starch and reducing sugars. Applications.
- 6. - Determination of fiber. Overview. Methods of analysis. Total fiber, insoluble and soluble. Applications.
- 7. - Determination of ash: Importance. General method. Types of ash. Applications.
- 8.- Determination of mineral elements: Importance. Sample preparation. Element analysis of interest. Applications.
- 9. - Determination of Vitamins. Extraction and separation. Most common methods used in their determination.
- 10. - Additives: Standards of identity and purity. Methods of analysis. Determination food
- 11. - Quality control of protein foods. Quality parameters. Alteration, adulteration and fraud more common. Methods of analysis.
- 12. - Quality control of edible oils and fats. Standards and analytical methods.
- 13. - Quality control of hydrocarbon food. Quality parameters. Methods of analysis
- 14. - Spices and condiments. General Methods. Specific methods. Composition of authentic spices. Determining the geographic origin of a kind. Food stimulants. Quality control.
- 15. - Canned and semi preserved Foods. Packaging, Labeling and factors relating to storage.
- 16. - Water. Soft drinks and alcoholic beverages. Quality parameters.
- 17. - Sensory attributes. Appearance or aspect. Importance of color. Odor and flavor: properties and sensory evaluation
- 18. - Consumer Panel. Features. Composition. Objectives. Affective sensory tests. Utility. Statistical treatment. Interpretation of results. Analytical Panel. Features. Composition. Objectives. Selection process, training and monitoring. Basic conditions of operation. Normalized vocabulary.
- 19. - Sensory discriminative tests. Classification. Objectives. Paired comparison test. Triangle test. Duo-trio test. Multiple comparisons. Other. Applications. Statistical analysis and interpretation of results.
- 20. - Descriptive sensory tests. Classification. Objectives. Sensory profiles. Flavor profile. Texture profile. Advanced Techniques. Applications. Statistical analysis and interpretation of results. Measurement scales.
- 21. - Organoleptic assessment of virgin olive oil. Regulations. Objective. Sensory attributes. Methodology. Profile sheet. Statistical treatment of data and interpretation of results.
- 22. - Wine tasting. Factors affecting the sensory quality of wine. Influence of process and aging. Sensory attributes. Vocabulary and methodology. Tasting notes.



## PRACTICES

### Seminars / Workshops

- Design of Standard Operating Procedures
- Use of Reference Materials
- Reporting

### Laboratory Practices

Practice 1. - Performing preference sensory analysis: paired comparison test.

Discriminative tests: duo-trio test and triangular test

Practice 2. Organoleptic assessment of virgin olive oil: different sensory attributes and profile sheets

Practice 3. - Wine tasting: sensory attributes and profile sheet

Practice 4. - Determination of essential elements and pollutants by atomic absorption spectroscopy

Practice 5. - Determination of caffeine and quinine in soft drinks

Practice 6. - Determination of reducing sugars and acidity in honey

## READING

### BASIC BIBLIOGRAPHY

- Adrian, J., Potus, J., Poiffait, A., Dauvillier, P. 2000. Análisis Nutricional de los Alimentos. Ed. Acribia, S.A. Zaragoza, España.
- AENOR. 2010. Análisis sensorial. 2ª edición, AENOR, Madrid, España.
- Alvarado, J. de Dios, Aguilera, J.M. (Eds.). 2001. Métodos para medir propiedades físicas en Industrias de Alimentos. Ed. Acribia, S.A. Zaragoza, España.
- AOAC 1993. Methods of Analysis for nutrition labeling. Eds. Sullivan, D.M.; Carpenter, D.E., Arlington, VA, USA.
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- Ibáñez F., Barcina Y. 2001. Análisis sensorial de alimentos: métodos y aplicaciones. Ed. Springer-Verlag. Barcelona, España.
- Instituto Nacional de Consumo. 1999. Métodos Analíticos del Laboratorio del Instituto Nacional del Consumo (CICC). Alimentos I. Ed. Ministerio de Sanidad y Consumo, Madrid, España.
- Jackson R.S. 2008. Wine Science: principles and applications. Ed. Elsevier. San Diego, E.E.U.U.
- Matissek, R.; Schnepel, F.M.; Steiner, G. 1998. Análisis de los alimentos. Fundamentos, métodos, aplicaciones. Ed. Acribia, S.A. Zaragoza, España.
- Ministerio de Agricultura, Pesca y Alimentación (MAPA). 1998. Métodos Oficiales de Análisis en la Unión Europea. Madrid.
- Nielsen, S.S., Boff, J.M., Bradley, R.L., Bridges, A.R., BeMiller, J.M. 2008. Análisis de los alimentos. Ed. Acribia, S.A. Zaragoza, España.



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- Watson, D.H., Meam, M.N. 1995. Migración de sustancias químicas desde el envase al alimento. Volumen II. Ed. Acribia, S.A. Zaragoza, España.

#### SUPPLEMENTARY BIBLIOGRAPHY

- AENOR. 1997. Análisis sensorial. Tomo 1. Alimentación: Recopilación de Normas UNE. AENOR. Madrid, España.
- Anzaldúa-Morales A. 1994. La evaluación sensorial de los alimentos en la teoría y la práctica. Ed. Acribia, S.A. Zaragoza, España.
- Chamorro M.C., Losada M.M. 2002. El análisis sensorial de los quesos. Ed. Mundi-Prensa. Madrid, España.
- Ducauze, Ch. J. 2006 Fraudes alimentarios. indicaciones reglamentarias y metodología analítica. Ed. Acribia, S.A. Zaragoza, España
- Mijares M.I., Saez Illobre J.A. 1995. El vino: de la cepa a la copa. CDN-Ciencias de la Dirección. Madrid, España.
- Rosenthal, A.J. 2001. Textura de los alimentos. Medida y percepción. Ed. Acribia, S.A. Zaragoza, España.
- Sancho J., Bota E., De Castro J.J. 1999. Introducción al análisis sensorial de los alimentos. Edicions Universitat de Barcelona. Barcelona, España.
- Stone H., Sidel J.L. 1993. Sensory evaluation practices. Academic Press. California. E.E.U.U.

#### RECOMMENDED INTERNET LINKS

##### Organizations

- [Agencia Española de Seguridad Alimentaria y Nutrición - AESAN](#)
- [Association of Official Analytical Chemists - AOAC](#)
- [Codex Alimentarius](#)
- [European Food Safety Authority - EFSA](#)
- [European Food International Council European Federation for Biotechnology - EUFIC](#)
- [Institute of Food Science & Technology - IFST](#)
- [International Life Sciences Institute - ILSI](#)
- [International Organization for Standardization - ISO](#)
- [Ministerio de Agricultura, Alimentación y Medio Ambiente](#)

##### Journals

- [Critical Reviews in Food Science and Nutrition](#)
- [Food Chemistry](#)
- [International Journal of Food Science and Nutrition](#)
- [Journal of Agricultural and Food Chemistry](#)
- [Journal of Food Composition and Analysis](#)
- [Journal of Association of Official Analytical Chemists International](#)
- [Proceedings of the National Academy of Sciences](#)



### **Food Law**

- [Boletín Oficial de la Junta de Andalucía](#)
- [Boletín Oficial del Estado](#)
- [Diario Oficial de la Unión Europea](#)

### **Other Websites of Interest**

- [Confederación de Industrias Agro-Alimentarias de la Unión Europea - CIAA](#)
- [Federación Española de Industrias de la Alimentación y Bebidas - FIAB](#)
- [Informacion Consumidor](#)
- [Portal de Tecnologías y Mercados del Sector Alimentario](#)

