NOVEL AND FUNCTIONAL FOODS

Degree in Human Nutrition and Dietetics

Code: 804012
Subject: Supplementary education
Type of subject: Optative
Aimed at: all Students
Department: Nutrition and Food Science (Food Science Teaching Unit)
Credits: 3 ECTS

Teaching period: second semester (January to april 2027)
Start date:
Timetable: Wednesday from 11:30 to 14:00
Place: Faculty of Medicine
Number of students: 40
Groups: 1

LECTURES

Coordinator: Prof. Dr. Rosa Mª Cámara Hurtado (rm.camara@ucm.es)

Professors:
Profª Dra. Rosa Mª Cámara Hurtado (rm.camara@ucm.es)
Profª Dra. Marisol Villalva Abarca (Marisol.villalva@ucm.es)

BRIEF DESCRIPTION

The study of "new foods", functional foods and food ingredients concepts. The role that new foods and functional foods may play in the future and its health implications. To study of the most relevant aspects of the application of agrobiotechnology and new technologies for obtaining functional foods and ingredients. Health and nutrition claims of application to nutrients and bioactive compounds..

SKILLS

They are those corresponding to the Module and Subject to which this type of subject belongs.

General skills
•C.G.1.1. • C.G.1.2. • C.G.1.3. • C.G.1.4. • C.G.2.1.G.2.2 • C.G.2.3 • C.G.3.1. • C.G.4.2. • C.G.4.3. C.G.4.6. • C.G.5.1• C.G.5. 2.. • C.G.5.3. • C.G.5.4. • C.G.6.1. • C.G.6.2. • C.G.7.1 • C.G.7.3. • C.G.7.4. • C.G.8.1.

Specific skills

• CE.M7.1 • CE.M7.2 • CE.M7.3 • CE.M7.4 •CE.M7.5

OBJETIVES

Introducing to students to the new possibilities for the development of food according to the European Union (EU) regulation regarding new foods, functional foods and genetically modified organisms. Its regulatory framework and current situation in the market. Case study evaluation.

TOPICS

Topic 1. Novel foods. Legal concept and main categories.

Topic 2. Authorization procedure and labelling regulation. Case studies.

Topic 3. Food and food ingredients obtained by modern biotechnology. Genetically modified organisms (GMOs). General concepts and methodology.

Topic 4. Objectives of genetic improvement and most important transformations. Current situation worldwide. Case studies.

Topic 5. Regulatory aspects of GMOs. Labelling and traceability.

Topic 6. Safety assessment of GMOs.

Topic 7. Food and functional ingredients. Concept and types. Nutrition and health claims of foods.

Topic 8. Dietary fiber. Physiological effects and mechanisms of action. Prebiotics. Concept, types and beneficial effects.

Topic 9. Probiotics. Current concept and practical cases**.**

Topic 10. Mono and polyunsaturated fatty acids. Food sources and interest from the point of view of health.

Topic 11. Protein and bioactive peptides. Types and positive effects.

Topic 12. Vitamins and minerals with approved health claims.

Topic 13. Bioactive compounds with antioxidant properties. Case studies**.**

TEACHING METHODOLOGY

Master classes, resolution of case studies and seminars
Theoretical classes: Explanation of theoretical foundations using computer tools.

Directed activities: Analysis of case studies.

Student seminars: Presentation by students of topics related to the subject as collaborative work. Attendance and participation is mandatory and will be controlled.

Tutorials: guidance and resolution of doubts.

EVALUATION CRITERIA

The final grade for the course will depend on the final exam consisting of a written test (80%), participation in directed activities proposed throughout the course (5%), and attendance at expert seminars and participation in student's seminars. with the presentation of a work on a topic directly related to the subject (15%).

The theoretical exam may consist of a single final exam or partial exams (continuous evaluation) and will be carried out in writing, in the form of short and medium length questions or multiple choice.

Seminars could be performed by individuals or in groups (maximum 3 students per group) and will be presented orally; a written presentation is not required. In seminars, the participation of each student, the content and the way of exposing it will be valued. Attendance at the seminars is mandatory and will be taken into account in the final grade.

To pass the subject, it is necessary to obtain a minimum score of 5 out of 10 in the final exam, as well as in the exposed seminar.

Attitude to follow in the event of a voluntary or accidental violation of the rules for conducting the exam.

The voluntary or accidental infraction of the norms of taking the exam prevents its assessment, so the offending student will take an oral exam of the subject to establish their knowledge of the subject. If intentionality in the deception is confirmed, the Inspection Services will be informed to take the disciplinary measures that it deems appropriate.

REFERENCES

- Binns, N. (2013), Probiotics, prebiotics and the gutmicrobiota. ILSI Europe, Bruselas, Bélgica.
- CAM (2008), Alimentos funcionales. Aproximación a una nueva alimentación,Dirección General de Salud Pública y Alimentación, Comunidad de Madrid.
- Cámara, M; Fernández-Ruiz, V; Domínguez Díaz, L; Cámara Hurtado, RM; Sánchez Mata, MC. (2022). Global concepts and Regulations in Functional foods". Book: "Functional Foods". Editores: Navnidhi Chhikara, Anil Panghal, Gaurav Chaudhary. Wiley.
- FAO (2006), "Probióticos en los alimentos. Propiedades saludables y nutricionales y directrices para la evaluación", Estudio FAO Alimentación y Nutrición 85, Organización de las Naciones Unidas para la Agricultura y la Alimentación, Roma.
- FECYT (2005), Alimentos Funcionales, Fundación Española para la Ciencia yla Tecnología, Madrid.
- Gray, J. (2006), Dietary fibre definition, a nalysis, physiology & health, ILSI Europe, Bruselas, Bélgica.
- Howlet, J. (2008), Functional foods from science to health and claims, ILSI Europe, Bruselas, Bélgica.
- ILSI (2004), Conceptos sobre los Alimentos funcionales, ILSI (internacional Life Science Intitute) Europe, Bélgica.
- Mazza, G. (2000), "Alimentos funcionales. Aspectos bioquímicos y de procesado", Editorial Acribia, Zaragoza.
- Muñoz, E. Ed. (2006), Organismos Modificados Genéticamente, 157-153, Editorial Ephemera, Alcalá de Henares, Madrid.
- Navnidhi Chhikara, Anil Panghal, Gaurav Chaudhary (2022) Functional Foods. John Wiley
- and Sons, Scrivener Publishing LLC, Beverly, MA (USA)

- Reglamento (UE) 2015/2283 del Parlamento Europeo y del Consejo de 25 de noviembre de 2015 relativo a los nuevos alimentos
- Reglamento (CE) nº 1829/03 del Parlamento Europeo y del Consejo, de 22 de septiembre de 2003, sobre alimentos y piensos modificados genéticamente.
- Reglamento (CE) nº 1830/03 del Parlamento Europeo y del Consejo, de 22 de septiembre de2003, relativo a la trazabilidad y al etiquetado de organismos modificados genéticamente y a la trazabilidad de los alimentos y piensos producidos a partir de éstos.
- Reglamento europeo de alegaciones nutricionales Reglamento (CE) 1924/2006, de20 de diciembre de 2006. Corrección de errores del Reglamento (CE) 1924/2006, de 18 de enero de 2007.
- Reglamento (UE) nº 1169/2011 del Parlamento Europeo y del Consejo, de 25 de octubre de2011, sobre la información alimentaria facilitada al consumidor y por el que se modifican los Reglamentos (CE) nº 1924/2006y (CE) nº 1925/2006 del Parlamento Europeo y del Consejo, y por el que se derogan la Directiva 87/250/CEE de la Comisión, la Directiva 90/496/CEE del Consejo, la Directiva1999/10/CE de la Comisión, la Directiva2000/13/CE del Parlamento Europeo y del Consejo, las Directivas 2002/67/CE, y2008/5/CE de la Comisión, y el Reglamento(CE) nº 608/2004 de la Comisión.
- Reglamento (UE) Nº 432/2012 de la Comisión de16 de mayo de 2012 por el que se establece una lista de declaraciones autorizadas de propiedades saludables de los alimentos distintas de las relativas a la reducción del riesgo de enfermedad y al desarrollo y la salud de los niños. Diario Oficial de la Unión Europea, L 136/1, (25-05-2012).

Web pages:

- Agencia Española de Seguridad Alimentaria y Nutrición: https://www.aesan.gob.es/AECOSAN/web/home/aecosan_inicio.htm
- Autoridad Europea de Seguridad Alimentaria (EFSA): http://europa.eu/agencies/regulatory_agencies_bodies/policy_agencies/efsa/index_es.htm
- European Federation of Food Science & Tecnhology: www.effost.org
- FSA- Food Standards Agency - Reino Unido: www.foodstandards.gov.uk
- FAO: www.fao.org/index_es.htm
- FDA: www.fda.gov/oia/agencies.htm
- ILSI Europe: www.ilsi.org/Europe
- Sociedad espa√±ola de probi√≥ticos y prebi√≥ticos: www.sepyp.es
- USDA:www.usda.gov/wps/portal/usda/usdahome
- OMS: www.who.int/foodsafety/en
- Fundación para la aplicación de nuevas tecnologías en la agricultura en el medioambiente y la alimentación:www.fundacionantama.org

Approved by Department Board, on April 29th, 2026