

**COURSE DATA****Data Subject**

Code	33999
Name	New Foodstuffs
Cycle	Grade
ECTS Credits	6.0
Academic year	2021 - 2022

Study (s)

Degree	Center	Acad. Period
1103 - Degree in Food Science and Technology	Faculty of Pharmacy and Food Sciences	4 First term

Subject-matter

Degree	Subject-matter	Character
1103 - Degree in Food Science and Technology	32 - Novel foods	Optional

Coordination

Name	Department
GIL PONCE, JOSE VICENTE	265 - Prev. Medicine, Public Health, Food Sc., Toxic. and For. Med.

SUMMARY

Novel Foods is an elective subject in the fourth year of Degree in Food Science and Technology, which is taught in the Faculty of Pharmacy, University of Valencia. This subject has a total of 6 ECTS credits.

Regulation EC 258/97 of the European Commission and the Council of 27th January 1997 concerning novel foods and food ingredients provide the detailed rules for the licensing, marketing and labeling of novel foods and novel food ingredients. This regulation defines novel foods and novel food ingredients are those that have not been on the EU market to a significant degree before the entry into force of the Regulation in May 1997. Will be classified as novel foods gm foods, exotic foods and foods of new formulation or processing technology, many of which are enclosed in so-called functional foods. Functional food is defined as one that, as part of a balanced diet, has a health benefit beyond their nutritional value. The current European normative requires a robust and rigorous scientific demonstration of the healthful properties that are declared in a food. This fact, has promoted in recent years the research of the multiple beneficial effects of food ingredients and the development of areas such as nutrigenomics, which seeks to establish the relationship between diet and genome.



PREVIOUS KNOWLEDGE

Relationship to other subjects of the same degree

There are no specified enrollment restrictions with other subjects of the curriculum.

Other requirements

To have completed the subjects Biology, Biochemistry, Microbiology Chemistry

OUTCOMES

1103 - Degree in Food Science and Technology

- Manufacture and preserve food.
- Know the key bioactive components in foods and nutraceuticals.
- Integrar y evaluar la relación entre alimentación y nutrición en estado de salud y situaciones patológicas.
- Conocer la legislación relativa a las declaraciones nutricionales y propiedades saludables.
- Know about new trends in food technology for the preparation of bioactive components and marketing of novel foods and nutraceuticals.

LEARNING OUTCOMES

- Understanding the concept of novel food in accordance with European regulation.
- Knowing the healthy effect of certain ingredients beyond its mere nutritional value.
- Understanding the current concept of functional food and nutraceutic.
- Understand the current regulation on nutrition and health claims made on foods.
- Understanding what is nutrigenomics and its importance in the design of customized diets.
- Knowing the latest advances in design of functional foods.

DESCRIPTION OF CONTENTS

1. Introduction

Topic 1. Novel Foods.

Definition. European regulation. Categories of novel foods.

Topic 2. Functional foods.

History and definitions. Nutrition and healthy. Regulation.

Topic 3. Genetically modified foods.



Definition. GM foods today. The social debate.

2. Probiotics and prebiotics

Topic 4. The human gut microbiota.

Bases of the human gut physiology. Physiological functions. Ecology of the gastrointestinal tract. Microbial metabolism in the gastrointestinal system.

Topic 5. Probiotics.

Definitions. Requirements and evaluation criteria. Functions and mechanisms of action. Selection and production methods.

Topic 6. Beneficial effects of probiotics.

Gastrointestinal disorders. Intestinal inflammatory diseases and syndromes. Cancer. Allergy. Urogenital tract disorders.

Topic 7. Prebiotics and synbiotics.

Definition, types and properties. Selection and evaluation methods. Physiological and local effects. Modulation of the gastrointestinal microbiota. Immune system. Metabolism and absorption. Probiotics in infancy. Gastrointestinal effects. Probiotics in old age. Cancer. Other beneficial effects.

3. Functional ingredients

Topic 8. Carbohydrates and dietary fiber.

Carbohydrates as functional ingredient. Definition and types of dietary fiber. Physiological functions of dietary fiber. Functional foods with fiber.

Topic 9. Proteins and peptides.

Biological effects of functional peptides. Origin and methods for obtaining peptides with biological activity. Functional foods with active peptides

Topic 10. Fatty acids.

Physiological functions and the origin of short-chain fatty acids, phospholipids, polyunsaturated fatty acids and conjugated fatty acids. Functional foods with fatty acids.

Topic 11. Antioxidants.

Oxidative stress. Modes of action. Toxicological aspects. Antioxidant compounds. Functional foods with antioxidants.

Topic 12. Nutraceuticals.

Definitions. Plant extracts. Examples of nutraceuticals. Regulations.

4. Nutrigenomics

Topic 13. Nutrigenetics and nutrigenomics.

Definitions. Past, present and future. Gene-diet interactions. Methodology. Nutrigenomics in sickness and health.

Topic 14. Nutrigenomics and prevention.

Public Health. Cancer. Cardiovascular disease. Obesity.



5. Social aspects

Topic 15. Regulations and society.

Regulation on functional foods outside the European Union. Draft Regulation of the European Union. Economic impact on the business sector. Dissemination tools and social impacts.

6. Laboratory work

1. Probiotic bacteria in fermented milk.
2. Production of fermented milk.
- 3) Evaluation of the antioxidant capacity of foods and commercial extracts.

WORKLOAD

ACTIVITY	Hours	% To be attended
Theory classes	38,00	100
Laboratory practices	15,00	100
Seminars	2,00	100
Tutorials	2,00	100
Development of group work	5,00	0
Development of individual work	5,00	0
Study and independent work	10,00	0
Readings supplementary material	5,00	0
Preparation of evaluation activities	30,00	0
Preparing lectures	15,00	0
Preparation of practical classes and problem	10,00	0
Resolution of case studies	10,00	0
TOTAL	147,00	

TEACHING METHODOLOGY

Teaching is based on the individual study of the topics that will be reinforced with the organization of **tutoring**. Prior to the date of tutoring, the student must have prepared the proposed activities to reinforce the learning of specific aspects of the program. **Classes** are taught using audio-visual equipment. The student will have this material available in the virtual classroom.



The **laboratory work** will favor the relationship between knowledge and its application to practice. Prior to visit the lab, be provided a booklet with the procedures, as well as a number of issues and problems that students must solved and return the teacher within a certain time.

Will be conducted **seminars** on topics suggested by the teacher and related to the subject. The preparation of the seminar will be supervised by the teacher. The work shall be in writing and will be presented by students.

Along the theoretical and laboratory classes, examples of the applications of the contents of the subject in relation to the Sustainable Development Goals (SDG) will be addressed, as well as in the proposals of topics for the coordinated seminars. The aim is to provide students with knowledge, skills and motivation to understand and address these SDGs.

EVALUATION

- a) (10%) Producing, presentation and defense of works related to the contents explained and discussed in the classroom related to one of the subjects studied during the semester (coordinated seminars). Written work and the level of understanding of the content and skills to their exposure, advocacy and discussion will be evaluated.
- b) (60%) Evaluation of theoretical content established for the subject through a written test. A minimum of 4 points out of 10 in this test is needed to pass the subject.
- c) (20%) Evaluation of laboratory work through a written test that will reflect the work done and the ability to solve the experimental problems raised, and, optionally, assess the ability to make well-detailed and organized reports of experimental results. A minimum of 4 points out of 10 in this test is needed to pass the subject
- d) Evaluation of the work during the tutorials and the ability to solve the proposed activities (10%).

To pass the subject, you must obtain 4.5 or more points out of 10 in the weighted sum of sections b) and c), and 5 or more points out of 10 in the final grade, considering all evaluable activities.

To obtain “with honors” mention (matrícula de honor), it is a preferred criterion to pass the subject in the first convocation.

Attendance at practices is obligatory for passing the subject except for those students that have undertaken these classes previously. Unjustified non-attendance to tutorials and coordinated seminars imply zero points in the corresponding evaluation section except for those students that have undertaken these classes in previous years.



REFERENCES

Basic

- Webb, G.P. (2007) Complementos nutricionales y alimentos funcionales. Ed. Acribia. Zaragoza.
- Bañares, S. (2006). Los alimentos funcionales y las alegaciones alimentarias, una aproximación jurídica. Ed. Atelier. Barcelona.
- Serra, L. (2008). Guía de la alimentación funcional: Los probióticos en la alimentación humana. Ed. Elsevier Masson. Barcelona.
- FECYT. (2005). Alimentos funcionales. FECYT, Madrid, España.
- Mazza, G. (2000). Alimentos funcionales. Ed. Acribia, Zaragoza, España
- Aranceta, (2002). Alimentos funcionales: Probióticos.
- Hurst, J (2002). Methods of analysis for functional foods and nutraceuticals.

Additional

- Ramón, D. (1999). Los genes que comemos. Ed. Algar. Alzira
- Sociedad Española de Biotecnología (SEBIOT). Cuadernos de preguntas y respuestas sobre biotecnología. Acceso gratuito en formato pdf. <http://www.sebiot.org/>
- Muñoz, E. (2006). Organismos modificados genéticamente. Ed. Ephemera. Madrid.
- Gibson, (2002). Functional foods. Concept to product.
- Gunstone, F.D. (2003). Lipids for functional food and nutraceuticals.
- Heasman, M (2001). The functional foods revolution healthy people, healthy profits.
- Ruiz, M. L. (2001). Nutrición clínica: implicaciones del estrés oxidativo y de los alimentos funcionales.
- Wildman, R.E.C. (2001). Handbook of nutraceuticals and functional foods.

ADDENDUM COVID-19

This addendum will only be activated if the health situation requires so and with the prior agreement of the Governing Council

3. Teaching methodology

Theory classes: 100% of the planned theory classes will be taught. If they could not be face-to-face in the classroom, they will be held by synchronous videoconference through the Blackboard Collaborate application, respecting the schedule programmed.



Practical classes: If due to limitations in capacity, 100% of the practical contents cannot be taught in the laboratory, complementary non-contact activities will be carried out using audio-visual material and the discussion of practical cases.

4. Evaluation

Continuous assessment: There will be a test to evaluate topics 1 and 2 before the first classroom tutorial session and another of topics 4, 5, 6 and 7 before the second classroom tutorial session. The marks obtained will count 20%, respectively, of the grade for the theoretical final exam only if they are higher than that of the final exam (so they are only used if they lead to raise the grade, but not to lower it).