COURSE DATA

Data Subject	
Code	41029
Name	Food Technology and Biotechnology
Cycle	Master's degree
ECTS Credits	10.0
Academic year	2023 - 2024

Study (s)

Degree	Center	Acad. year	Period
2021 - Master's Degree in Food Quality and Safety	Faculty of Pharmacy and Food Sciences	1	Annual

Subject-matter

Degree	Subject-matter	Character
2021 - Master's Degree in Food Quality and Safety	3 - Food technology and biotechnology	Obligatory

Coordination

Name	Department
ROIG MONTOYA, PATRICIA	265 - Prev. Medicine, Public Health, Food Sc.,Toxic. and For. Med.
RUIZ LEAL, MARIA JOSE	265 - Prev. Medicine, Public Health, Food Sc.,Toxic. and For. Med.

SUMMARY

The Food Technology and Biotechnology module will provide knowledge oF the latest methods used in food preservation, processing and packaging, as well as the newest biotechnological techniques developed for the detection of pathogenic microorganisms in food and for the improvement of microorganisms used in the production of fermented foods. In addition, it is intended to give a global vision of the characteristics of functional and transgenic foods, analysing their impact on both food quality and consumer health

PREVIOUS KNOWLEDGE

Relationship to other subjects of the same degree

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

Other requirements

Not applicable

COMPETENCES (RD 1393/2007) // LEARNING OUTCOMES (RD 822/2021)

2021 - Master's Degree in Food Quality and Safety

- Ser capaz de entender las metodologías para el procesado de los alimentos.
- Adquirir conocimientos sobre los procedimientos reglamentarios en la gestión de la calidad alimentaria
- Students should apply acquired knowledge to solve problems in unfamiliar contexts within their field of study, including multidisciplinary scenarios.
- Students should be able to integrate knowledge and address the complexity of making informed judgments based on incomplete or limited information, including reflections on the social and ethical responsibilities associated with the application of their knowledge and judgments.
- Students should communicate conclusions and underlying knowledge clearly and unambiguously to both specialized and non-specialized audiences.
- Capacidad para adaptar los procesos relacionados con los alimentos a las normas vigentes de higiene de los alimentos y sistemas de gestión de calidad.
- Conocer la investigación que en alimentación, nutrición y tecnología alimentaria demanda nuestra región.
- Conocimientos básicos sobre los principales grupos microbianos relacionados con los alimentos y familiarizarse con los métodos de clasificación microbiana.
- Capacidad para la aplicación de las principales técnicas biológicas y biotecnológicas para la detección de microorganismos y la interpretación de los resultados.
- Manejar la metodología estadística y saber analizar problemas y aplicar las herramientas estadísticas más apropiadas en cada caso.
- Conocimiento de los métodos más empleados en la conservación y transformación de alimentos así como de las tecnologías emergentes y tecnologías de envasado.
- Students should possess and understand foundational knowledge that enables original thinking and research in the field.
- Ser capaces de obtener y de seleccionar la información y las fuentes relevantes para la resolución de problemas, elaboración de estrategias y asesoramiento a clientes.

- Elaborar y manejar los escritos, informes y procedimientos de actuación más idóneos para los problemas suscitados.
- Contemplar en conjunto y tener en cuenta los distintos aspectos y las implicaciones en los distintos aspectos de las decisiones y opciones adoptadas, sabiendo elegir o aconsejar las más convenientes dentro de la ética, la legalidad y los valores de la convivencia social.
- Know how to work in multidisciplinary teams reproducing real contexts and contributing and coordinating their own knowledge with that of other branches and participants.
- Participate in, lead and coordinate debates and discussions, be able to summarize them and extract the most relevant conclusions accepted by the majority.
- Use different presentation formats (oral, written, slide presentations, boards, etc.) to communicate knowledge, proposals and positions.
- Proyectar sobre problemas concretos sus conocimientos y saber resumir y extractar los argumentos y las conclusiones más relevantes para su resolución.
- Planificar, ordenar y encauzar actividades de manera que se eviten en lo posible los emprevistos, se prevean y minimicen los eventuales problemas y se anticipen sus soluciones.
- Obtener la formación necesaria para incorporarse a Departamentos de Investigación, Desarrollo e Innovación dentro de las empresas del sector agroalimentario.

LEARNING OUTCOMES (RD 1393/2007) // NO CONTENT (RD 822/2021)

- Know the most innovative methods of preserving, transforming and packaging food.

- Know the application of the main biotechnological techniques for the detection of pathogenic micro-organisms in food.

- Know the application of biotechnology for the improvement of microorganisms used in the production of fermented foods.

- Understand biotechnological techniques for improving the nutritional value of foods.

- Understand the characteristics of functional and transgenic foods and their impact on both food quality and consumer health.

DESCRIPTION OF CONTENTS

1. Technology and Food Biotechnology

- New approaches to techniques for preserving and improving food quality
- New Antifungal Compounds for Use in Food
- Packaging materials and technologies for food marketing.
- Strategies for obtaining sustainable and healthy cereal-derived foods
- Biochemistry of Meat and Meat Products
- Biotechnological needs in the wine industry: improvement of microorganisms
- Strategies in Sensory Analysis of Food

- Comprehensive study of the reformulation of foods with the best nutritional profile
- Use of microorganisms as biofactories to produce enzymes and metabolites of interest in food
- Biotechnology and Stress Response in Lactic Acid Bacteria
- Baker's yeasts: new challenges for a biotech classic
- Immunoanalytical Approaches to Food Safety
- Statistical Techniques in Food Safety
- Use of omics techniques applied to food quality and safety
- Novel techniques for the detection and identification of pathogenic microorganisms in food

WORKLOAD

ACTIVITY	Hours	% To be attended
Theory classes	85,00	100
Attendance at events and external activities	18,00	0
Development of group work	20,00	0
Study and independent work	18,00	0
Readings supplementary material	15,00	0
Preparation of evaluation activities	4,00	0
Preparing lectures	40,00	0
Preparation of practical classes and problem	50,00	0
TOTAL	**250,00**	

TEACHING METHODOLOGY

Theoretical classes: the speaker, an expert in the topic to be discussed, will provide the student with information on the subject under study (basic and/or complementary) previously in the virtual classroom. To follow the class, it is recommended that the student review this material beforehand.

Group work activities: The speaker may propose individual and/or group activities to master's students.

Conferences will be held on specific topics of interest such as entrepreneurship, food safety, industrial doctorate and food innovation.

During the theoretical classes and activities, the applications of the contents of the subject in relation to the Sustainable Development Goals (SDGs) will be indicated. This is intended to provide knowledge, skills and motivation to understand and address these SDGs, while promoting reflection and criticism.

EVALUATION

To evaluate the theory, tests will be carried out throughout the period of teaching the subject. These tests may be written and/or *on-line*. The exam will consist of multiple-choice questions. It is necessary to have a grade ≥ 5 to pass the subject.

Individual and/or group assessable activities may be carried out that will contribute to the final grade by a maximum of 10%.

REFERENCES

Basic

- Lecturas recomendadas por los profesores y profesoras disponibles en bases de datos de la UV o accesibles por internet.

Additional

- Institute of Food Technologists: https://www.ift.org/
- Spanish Society of Biotechnology: https://sebiot.org/
- Association of Biotechnologists of Madrid: https://asbiomad.es/
- Institute of Agrochemistry and Food Technology: https://www.iata.csic.es/es