

68759 - Research in microorganisms in food, water and environment: traditional and molecular techniques

Syllabus Information

Academic year: 2023/24

Subject: 68759 - Research in microorganisms in food, water and environment: traditional and molecular techniques

Faculty / School: 105 - Facultad de Veterinaria

Degree: 631 - Master's Degree in Food Quality, Safety and Technology

ECTS: 3.0

Year: 1

Semester: Second semester

Subject type: Optional

Module:

1. General information

This subject is mainly practical. The theoretical sessions provide an introduction to practical ones. In these, the choice of a food matrix, a specific technique and how to approach the analysis itself are explained in a reasoned manner. In the practical sessions, students in small groups will analyse the proposed matrices, obtain results and interpret them.

These approaches and objectives are aligned with the Sustainable Development Goals (SDGs) of the United Nations Agenda 2030 (<https://www.un.org/sustainabledevelopment/es/>), so that the acquisition of the learning results of the subject provides training and competence to contribute to some extent to their achievement.

- Objective 3: Health and well-being.
- Objective 12: Responsible production and consumption.

2. Learning results

- To investigate microorganisms regardless of the matrix (food, water or environment) where they are found.
- To know and apply both traditional and molecular techniques for microbial quantification and identification.
- To interpret microbiological results based on food safety or process hygiene criteria, as well as the recommendations of renowned organizations.
- To establish or generate microbiological analysis plans or protocols according to the needs of the food industry.

3. Syllabus

Theoretical teaching

UNE/ISO standards for the detection of microorganisms of interest in food, water and environment.
Fundamentals and application of real-time PCR in food microbiology.

Practical teaching

Analysis of different matrices (food, water and environment) using ISO reference methods.
Detection and identification of food pathogens by rapid methods of analysis (Impedanciometry and real-time PCR).

4. Academic activities

Master classes: 6 hours. Theoretical sessions in which the contents of the practical teaching are explained.

Problem solving and case studies: 4 hours. Oral presentation and discussion of teaching assignments

Laboratory practices: 20 hours. Performing the analysis of different matrices using ISO reference methods and alternative methods.

Teaching assignments: 13.5 hours. Preparation of practice reports and tutored work on topics related to the subject.

Personal study: 30 hours

Assessment tests: 1.5 hours.

5. Assessment system

Continuous assessment

Test 1(75% of the grade, minimum 5 out of 10). Creation and oral presentation of an individual or group work on a topic

proposed by the teacher. The assessment criteria are the quality, content and scientific rigor of the work, as well as the oral presentation and defence of the same.

Test 2(25% of the grade, minimum 5 out of 10). The knowledge achieved during the practical sessions will be assessed by means of a written test with short answers and/or test to be taken at the end of the practical teaching. Results obtained by each of the groups will also be presented and discussed.

Global assessment.

Students who have not opted for continuous assessment (have not completed 80% of the proposed activities) or who have not passed any of the tests, will be assessed by a global test consisting of::

- Written, oral presentation and defence of a work on a topic proposed by the teacher
- Submission of a written microbiological analysis design and interpretation of the results, in different matrices.

The grading percentages for each activity and the assessment criteria will be the same for the global test and for the continuous assessment.