

29205 - Food Microbiology

Syllabus Information

Academic year: 2023/24

Subject: 29205 - Food Microbiology

Faculty / School: 229 - Facultad de Ciencias de la Salud y del Deporte

Degree: 441 - Degree in Human Nutrition and Dietetics

ECTS: 6.0

Year: 1

Semester: Second semester

Subject type: Compulsory

Module:

1. General information

The general objective of this subject is that the student knows the main pathogens that can be transmitted through food, as well as the altering microorganisms and those used for the elaboration of certain foods.

The curriculum of the Degree in Human Nutrition and Dietetics includes the subject "Food Microbiology" for two main reasons : The report of the Degree establishes that the student must know microbiology and parasitology to reach the specific competence of knowing and applying food sciences. This subject, together with "Toxicology of Food, provides essential knowledge to take the subjects Food Hygiene and Food Service Management.

These approaches and objectives are aligned with the Sustainable Development Goals (SDGs) of the 2030 Agenda of United Nations (<https://www.un.org/sustainabledevelopment/es/>), in such a way that the acquisition of the learning results of the subject provides training and competence to contribute to some extent to their achievement: Goal 2:Zero Hunger; Goal 3: Health and wellness

2. Learning results

In order to pass this subject, the students shall demonstrate they has acquired the following results:

Describe the most important biological characteristics of microorganisms (spoilage, producing and pathogenic) related to food.

Identify the factors that condition microbial activity in food and know how they allow the control of microorganisms

Describe the characteristics of the most important foodborne pathogens.

Know the microorganisms responsible for food alterations and transformations.

Present and exhibit works.

3. Syllabus

The microbial world. Brief history of Microbiology.

Microbial growth. Requirements. Growth phases.

Microbial ecology.

Control of microorganisms in food. Physical and chemical methods. Antimicrobial agents.

Foodborne pathogenic microorganisms. Reservoirs. Infective dose. Determinants of pathogenicity. Salmonella. Shigella. Escherichia. Yersinia. Campylobacter. Staphylococcus. Clostridium. Listeria. Bacillus. Brucella. Mycobacterium.

Toxicogenic fungi: Aspergillus, Fusarium, Penicillium.

Viruses. Enterovirus. Norwalk virus. Rotavirus.

Prions and their transmission to humans through food.

Foodborne parasites.

Food spoilage. Microbial development and alteration of fresh products: meat, fish and products of vegetable origin.

Practical knowledge:

Preparation of culture media.

Staining and observation of microorganisms.
Identification of microorganisms. Biochemical tests.
Antimicrobial sensitivity study.
Lactic fermentation process.
Microbiological analysis of food.

4. Academic activities

The subject is structured in 30 participative lectures, 10 hours of seminars organized in sessions of approximately 2 hours and 20 hours of laboratory practices. Seminar and practice papers will be presented in one of the seminar sessions. Theoretical classes and practical classes in the laboratory are developed in parallel to achieve a better understanding of the subject.

5. Assessment system

The student must demonstrate that they has achieved the intended learning results through the following assessment activities:

Completion of a written test with multiple-choice questions. It will be graded from 0 to 10 and will contribute 80% to the final grade, provided that a minimum grade of 5 has been obtained.

Presentation of group work. It will be graded from 0 to 10 and will contribute 10% to the final grade.

Written presentation of an individual report on classroom seminars. It will be graded from 0 to 10 and will contribute 5% to the final grade.

Active participation in the practical classes of the subject. Attendance and participation will be valued, as well as a report of the work done during the practices. It will be graded from 1 to 10 and will contribute 5% to the final grade.

Students who undertake to complete all the activities and submit a written report of all of them, may opt for a split evaluation of the theoretical contents of the course in two evaluation tests. A grade of 60% of the maximum grade on the first test must be obtained to eliminate these topics for the next exam. Otherwise, the student will have to take the written test on the total of the syllabus.

The rest of the students can opt for a global evaluation that will consist of a written test on the theoretical and practical contents of the subject.