

26709 - Microbiological diagnostic and therapeutic procedures

Syllabus Information

Academic year: 2024/25

Subject: 26709 - Microbiological diagnostic and therapeutic procedures

Faculty / School: 104 - Facultad de Medicina

229 - Facultad de Ciencias de la Salud y del Deporte

Degree: 304 - Degree in Medicine

305 - Degree in Medicine

ECTS: 6.0

Year: 2

Semester: First semester

Subject type: Compulsory

Module:

1. General information

The subject and its expected results respond to the following approaches and goals:

The subject pursues the microbiological training of the student consolidating the level of previous knowledge in the area of Biology. The microbiological analysis serves to confirm or rule out the existence of the suspected infection, to know its aetiology, to orient and select the most appropriate antimicrobial treatment, to adopt the relevant epidemiological control measures, to constitute the database that will be a source of information to elaborate and modify protocols and clinical guidelines, as well as national statistics by the health administrations. This approach and objectives are aligned with the following Sustainable Development Goals (SDGs) of the United Nations 2030 Agenda (<https://www.un.org/sustainabledevelopment/es/>). Specifically, the learning activities foreseen in this subject will contribute to the achievement of Objective 3.3 (Goal 3) and 4.7 (Goal 4).

2. Learning results

The student, in order to pass this subject, must demonstrate the following results...

- To know the main infectious agents and their mechanisms of action.
- To manage disinfection and sterilization techniques.
- To know the basics of microbiology and parasitology.
- To know the main microbiological and parasitological diagnostic techniques and to interpret the results.
- To describe the most important biological characteristics of microorganisms and parasites that cause infectious diseases in humans.
- To identify the pathogenicity determinants and pathophysiological mechanisms by which microorganisms and parasites exert their pathogenic action in the human organism.
- To specify the criteria required to establish the etiological diagnosis, the appropriate samples to carry out the microbiological study and the conditions necessary for their acquisition, transport and preservation.
- To indicate the general and specific methods necessary to make the microbiological diagnosis from an appropriate sample. To identify their applications, limitations, advantages and disadvantages.
- To apply the basic scheme used in clinical microbiology for the processing of the most common pathological products in the different locations of infections. To acquire certain skills in the handling of instruments and of the basic techniques used in clinical microbiology laboratories, with knowledge of their scientific basis.
- To correctly interpret preliminary and definitive microbiological reports, with knowledge of their usefulness for patient care and their limitations.
- To establish the indications for *in vitro* sensitivity tests, the applicable techniques, their advantages, limitations and their correct interpretation.
- To select the antimicrobials potentially applicable in the treatment of infections according to their location, the agents potentially involved and clinical suspicion, establishing on a rational basis an empirical treatment with antimicrobials.
- To identify the basic elements that characterize the ecology and epidemiology of infectious agents and diseases, especially those that constitute serious health problems in our country.
- To adopt the prophylactic and control measures, both personal and community, necessary to prevent or limit the spread of infectious diseases.

3. Syllabus

General Part (Topics 1-9)

Introduction to Microbiology and Parasitology. General characteristics of bacteria. Bacterial physiology. Bacterial genetics Principles of disinfection and sterilization. Antimicrobials. Host-bacteria relationships. Fundamentals of epidemiology and prophylaxis. Microbiological diagnosis. Bacterial taxonomy and classification

Specific part (Topics 10-40)

Bacteriology (Topics 10-25), Mycology (Topics 26-27), Virology (Topics 28-35) and Parasitology (Topics 36-40)

The main microorganisms (bacteria, fungi, viruses, parasites) that cause infections in humans will be studied. Students will learn about the general characteristics of the microorganism, pathogenicity determinants, the clinical diseases they produce, epidemiology, laboratory diagnosis, treatment, control and prevention

4. Academic activities

THEORETICAL CLASSES (40h): sessions in which the teacher explains the subject's syllabus.

SEMINARS, PROBLEMS AND CASES (8h): 6 practical sessions with the teacher in small groups

LABORATORY PRACTICES (11h): sessions in which the knowledge acquired in the theoretical classes will be put into practice. Students will hand in a portfolio at the end of the practices.

A commitment to comply with work and safety standards must be signed in order to carry out the work.

The laboratory practices are organized in two blocks: Microbiological laboratory (6h), parasitology laboratory (3h) and clinical practices (2) to be carried out in hospital laboratories

5. Assessment system

Evaluation of practices (20%). The laboratory practices are compulsory. They will be evaluated by means of a portfolio and/or an exam at the end of the practices or the final exam day. The grade for this portfolio and/or exam will be from 0 to 10.

Seminar evaluation (10%). Participation in seminars may count up to 10% of the final grade.

Final theoretical exam (70%). The acquisition of basic theoretical knowledge of the subject will be evaluated by means of a final exam of short questions. Grading from 0 to 10. It is essential to pass the theoretical exam in order to average with the practices.

The final grades will be: Pass (5 to 6.9 points), Notable (7 to 8.9 points) and Outstanding (9 to 10 points).

6. Sustainable Development Goals

3 - Good Health & Well-Being

4 - Quality Education