Universidad Zaragoza

Academic Year/course: 2023/24

26812 - Biology

Syllabus Information

Academic year: 2023/24
Subject: 26812 - Biology
Faculty / School: 100 - Facultad de Ciencias
Degree: 297 - Degree in Optics and Optometry
ECTS: 6.0
Year: 2
Semester: Second semester
Subject type: Basic Education
Module:

1. General information

The main objective of this subject is that students acquire the necessary tools and knowledge to understand the molecular basis of the processes that take place in living beings and collaborate in the management of patients suffering from ocular infectious diseases and/or complications, extending the scope of their competence to the field of public health . This approach and objectives are aligned with the following Sustainable Development Goals (SDGs) of the United Nations Agenda 2030 (https://www.un.org/sustainabledevelopment/es/). Specifically, the learning activities foreseen in this subject will contribute to the achievement of Objectives 3.3 (Goal 3) and 4.7 (Goal 4).

2. Learning results

- To know and recognize the structure of biomolecules.
- To know the cellular structure and understand the function of each of its components.
- To know and understand the metabolic reactions of synthesis and transformation of these biomolecules, as well as the obtaining of energy in a living organism.
- To know the basic mechanisms of genetic information transfer in living beings.
- To know the biochemical basis of the mechanism of vision.
- To attain a basic knowledge of microbiology applied to human clinical practice and the clinical fundamentals that support it.
- To study the microorganisms involved in ocular infections as a basis for understanding their clinical evolution, treatment and prevention.
- To know and differentiate the infectious agents involved in ocular infections and their control procedures.
- To use basic biochemical and microbiological laboratory techniques and interpret their results.
- To collaborate in the early detection of ocular infectious processes and thus prevent avoidable risks and sequelae
- To participate directly as health educators with the ability to apply microorganism control procedures in professional practice.
- To maintain a fluid communication of the information obtained in their observations with other eye health professionals and the general public.

3. Syllabus

BLOCK I. MOLECULAR AND CELLULAR BIOLOGY:

T. 1. Origin, organization and classification of living beings.

T. 2-7. Chemical composition of cells. Biomolecules.

T. 8-13. The eukaryotic cell. Structure and function of cell organelles.

T. 14. Introduction to metabolism. General aspects of the main metabolic pathways and cell signalling.

T. 15. Introduction to molecular genetics

T. 16. From DNA to proteins.

T. 17. Cell Cycle and Apoptosis

T. 18. Biochemistry of vision: uptake and transmission of the visual signal. Recovery/Accommodation

BLOCK II. MICROBIOLOGY AND DIAGNOSIS OF OCULAR INFECTIONS.

T. 19- 20 Introduction. General characteristics of bacteria

T. 21-22. Nutrition, microbial growth and microbial genetics.

T. 23-24. Control of microorganisms and antimicrobials.

T. 25-26. Host-bacteria relationships and ocular infections.

T. 27-31. Bacteria, viruses, fungi and parasites that cause eye infections.

4. Academic activities

THEORETICAL CLASSES (4,4 ECTS): sessions with the teacher in which the subject's syllabus is explained

LABORATORY PRACTICES (1,6 ECTS): sessions in which the knowledge worked on in the theoretical classes will be put into practice and expanded. Students will hand in a portfolio at the end of the practices,

All students will be informed of the risks that may be involved in the practices and must sign a commitment to comply with the work and safety rules in order to be able to carry them out.

The laboratory practices are organized in two blocks: Biochemical Laboratory and Microbiological Laboratory.

5. Assessment system

The evaluation will include:

- Evaluation of practices (30%). The laboratory practices are compulsory. They will be evaluated by means of the completion of a portfolio at the end of the practices. The grading of this portfolio will be from 0 to 10. The class attendance may count up to 5% of the final grade.

- Final theoretical exam (70%). An evaluation of the acquisition of basic theoretical knowledge of the subject will be made by means of a final exam of multiple choice questions. The grade for this test will be from 0 to 10. The theoretical exam will be passed with a grade equal to or higher than 5 in each of the two parts of the subject (Biochemistry and Microbiology) separately.