

## Course Unit: 15735 – Applied Microbiologie II

Year 3 Semester 6 ISCED Code: 510 ECTS: 5.0

Type of Course Unit: Compulsory Delivery Mode: Face-to-face Language of Instruction: Portuguese

COURSE COORDINATOR: Olga Maria Reis Pacheco de Amaral

### HOURS OF WORK

TOTAL HOURS	Contact Hours								Hours in autonomous work
	Theory	Theory and practice	Practical and laboratory work	Field work	Seminar	Internship	Tutorial guidance	Other	
125	0	60	0	0	0	0	0	0	65

Prerequisites (if applicable): Not applicable

### LEARNING OUTCOMES (knowledge, skills and competence)

Acquisition of theoretical knowledge in environmental and clinical microbiology.

Acquisition of fundamental knowledge and practical execution in laboratory techniques of environmental microbiology.

Acquisition of skills and competences that allow to relate theoretical knowledge of environmental microbiology with its quality.

Acquisition of skills and competences that allow to relate theoretical knowledge in clinical microbiology with the diagnosis, prevention and treatment of infectious diseases and toxicology.

Application of microbiological methods of sampling, research, quantification and identification of microorganisms in environment and clinic. Interpretation of results obtained in microbiological controls based on legal limits or established in appropriate bibliography.

Application of preventive and corrective actions regarding harmful microbial actions.

### CONTENTS

Environmental Microbiology. Role of microorganisms in the environment. Microbial ecosystems: soil, air and water. Microorganisms as biogeochemical agents. Biodegradation and bioremediation. Methods of study and control of microbial ecosystems. Quality Indicators.

Clinical Microbiology. Microorganisms and disease. Transmission and dissemination of pathogens. Commensal microbial flora. Epidemiology of infectious diseases. The immune response. Laboratory diagnosis in clinical microbiology.

### DEMONSTRATION OF THE CONTENTS COHERENCE WITH THE COURSE UNIT'S LEARNING OUTCOMES

This UC aims to make students understand the microbiology of the environment and clinical microbiology as well as the factors that condition them. It is also intended to enable students to assess the quality and safety of the environment and to diagnose major diseases caused by micro-organisms.

### TEACHING METHODOLOGIES

Digital presentation of theoretical concepts.

Individual research on topics to be followed by the creation of discussion groups.

Practical classes for the execution of techniques of microbiological control of the environment and clinical microbiology.

Treatment and interpretation of microbiological control results.

## **DEMONSTRATION OF THE COHERENCE BETWEEN THE TEACHING METHODOLOGIES AND THE LEARNING OUTCOMES**

In this UC, and according to the various themes, there will be lectures and discussion classes on topics previously prepared by the students. The practical classes of practical execution allow to equip students with the usual techniques in microbiology of the environment and clinic. After the treatment and interpretation of the results will be followed the identification of preventive and corrective actions.

## **EVALUATION METHODS**

Preparation of reports of the practical work carried out.

Conducting theoretical tests throughout the semester and / or at the end of the semester. The minimum mark in each test is 9.5 points.

The final evaluation will be weighted considering the participation in the activities developed in the classes, in the practical reports and in the theoretical tests.

## **MAIN BIBLIOGRAPHY**

BARROSO, H., TAVEIRA, N., MELIÇO-SILVESTRE, A., Microbiologia Médica, Vol 1 e 2, Ed. Lidel

FERREIRA, W. F. C., J. C. SOUSA, 2010, Microbiologia, Ed. Lidel

MAIER, R. M., PEPPER, I. L., GERBA, C. P., 2000, Environmental Microbiology, Academic Press

MENDES, B., OLIVEIRA, J.F.S., 2004, Qualidade da Água para Consumo Humano, Ed. Lidel

TORTORA, G. J., B. R. FUNKE e C. L. CASE, 2007, Introduccion a la Microbiologia, 3ª ed., Ed. Acribia

Legislação, Regulamentos e Normas aplicáveis

Year of implementation: 2017/2018 | Date of approval by the Technical-Scientific Board: 2016-07-27