Course Unit	Option II - null			Field of study	Biotechnology		
Master in	Applied Health Sciences - Community Intervention			School	School of Health		
Academic Year	2022/2023	Year of study	1	Level	2-1	ECTS credits	4.5
Type	Semestral	Semester	2	Code	5055-668-1204-07-22		

Workload (hours)	121,5	Contact hours	T -	TP -	PL -	TC -	S -	E -	OT -	O -

T - Lectures; TP - Lectures and problem-solving; PL - Problem-solving, project or laboratory; TC - Fieldwork; S - Seminar; E - Placement; OT - Tutorial; O - Other

Name(s) of lecturer(s): Josiana Adelaide Vaz

Learning outcomes and competences

At the end of the course unit the learner is expected to be able to:
1. To deepen the knowledge in the field of Clinical Microbiology and molecular biology acquired in the first cycle,
2. To acquire advanced skills in the new generation molecular technologies for application in the diagnosis of agents causing infectious diseases,
3. To acquire advanced molecular technologies skills in the diagnosis of antimicrobial susceptibility and emerging mechanisms of resistance;
4. Provide advanced training in molecular epidemiology of outbreaks of infectious diseases.

Prerequisites

Before the course unit the learner is expected to be able to:
Knowledge in basic microbiology.

Course contents

The content of the curricular unit includes the following topics: Study of cutting-edge methodologies in the diagnosis of infectious diseases; Study of the main antibacterial agents; Study of methodologies for the evaluation of antimicrobial resistance profiles and emerging mechanisms of resistance.

Course contents (extended version)

1. HUMAN MICROBIOMA AND HEALTH
   - Influence of the human microbiome on health
   - Interaction between mechanisms of microbial and host pathogenicity
2. MOLECULAR DIAGNOSIS
   - The molecular diagnosis in the post-genomic era
   - Molecular and proteomic molecular diagnosis
   - Molecular diagnosis of viruses, bacterias and fungi
   - Molecular diagnosis in public health
3. ANTIBIOTHERAPY
   - Classes of antibiotics and mechanisms of resistance
   - Classical methods of antibiogram determination vs molecular methods in clinical practice
   - Bacterial biofilm and resistance
4. MOLECULAR EPIDEMIOLOGY
   - Concept of an operative taxonomic unit in microbiology
   - Classical methods of microbial phylogeny
5. PRACTICAL PROGRAM
   - Microscopy Techniques in the Diagnosis of Infectious Diseases
   - Molecular biology in the diagnosis of infectious diseases
   - Flow cytometry in the diagnosis of infectious diseases
   - Mass spectrometry in the diagnosis of infectious diseases
   - Execution and interpretation of antibiograms

Recommended reading

1. Jorgensen J et al. (2015) Manual of Clinical Microbiology. American Society for Microbiology. . 11 edición. ASM press. WashingtonDC.
2. Levinson W. (2014). Microbiologia Médica e Imunologia. Artmed Editora.
3. Sousa J. C. (2005). Manual de Antibióticos Antibacterianos. Universidade Fernando Pessoa- Gráficos Reunidos - Porto.
4. Bailey & Scott's (2013) Diagnostic Microbiology. Patricia Tille, 13ª edición. Elsevier.
5. Murray P, Rosenthal K, Kobayashi G, Pfaller M. (2009). Microbiologia Médica. Elsevier Editora Ltda. Brasil.

Teaching and learning methods

Lectures using powerpoint presentations. Lectures notes deposited in the e-learning resources. Practical classes - Realization of practical laboratory. Discussion of clinical cases and research papers. Teaching in collaboration with the Polytechnic Institute of Guarda, shared with Professor Paula Coutinho, in a videoconference environment.

Assessment methods

- Evaluation 1 - (Regular, Student Worker) (Final, Supplementary, Special)
   - Development Topics - 50% (Written assignment)
   - Presentations - 50% (Oral presentation)

Language of instruction

Portuguese

Electronic validation

Josiana Adelaide Vaz	Ana Maria Geraldes Rodrigues Pereira	Juliana Almeida de Souza	Adília Maria Pires da Silva Fernandes
21-03-2023	21-03-2023	28-06-2023	28-06-2023