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| Course Unit | Clinical and Laboratorial Microbiology I | | | Field of study | Biomedical Laboratory Sciences | | | | | | | | |
| Bachelor in | Biomedical Laboratory Sciences | | | School | School of Health | | | | | | | | |
| Academic Year | 2022/2023 | Year of study | 3 | Level | 1-3 | ECTS credits | 5.0 | | | | | | |
| Type | Semestral | Semester | 1 | Code | 9995-550-3106-00-22 | | | | | | | | |
| Workload (hours) | 135 | Contact hours | T - | TP 22,5 | PL 30 | TC - | S - | E - | OT 7,5 | 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): Hadassa Cristhina de Azevedo Soares dos Santos, Joao Pedro Afonso Rodrigues

## Learning outcomes and competences

At the end of the course unit the learner is expected to be able to:
1. Acquire knowledge of bacterial characteristics (morphological, physiological, biochemical, molecular) so as to associate the clinical diagnosis with laboratory diagnosis.
2. Execute and interpret methods of identification of microorganisms making it fit for the start of his profissional activity.

## Prerequisites

Before the course unit the learner is expected to be able to:
It is not necessary.

## Course contents

The course content includes the following topics: Bacterial pathogenicity; Classification of bactéricas; Study of the main etiological bacterial agents of human infections.

## Course contents (extended version)

1. Mechanisms of Bacterial Pathogenesis:
   - Entry of bacteria in the Human body
   - Colonization, adhesion and invasion
   - Bacterial mechanisms
2. Classification of bacteria:
   - Classification Phenotypic
   - Cost Rating
   - Classification Genotypic
3. Study of the major etiological agents of human bacterial infections.
   - Gram positive aerobic cocci, positive catalase: Staphylococcus and Micrococcus
   - Gram positive aerobic cocci, negative catalase, Streptococcus, Enterococcus, similar microorganisms
   - Gram positive bacilli, positive catalase nonsporing: Corynebacterium, Listeria and Other
   - Gram negative cocci: Neisseria
   - Gram negative coccobacilli - Haemophilus, Bordetella, Brucella.
   - Gram negative bacilli: Enterobacteriaceae, Acinetobacter and Stenotrophomonas
   - Gram negative bacilli and positive oxidase: Pseudomonas, Vibrio
   - Gram negative bacilli which require special culture media: Campylobacter and Helicobacter
   - Anaerobic microorganisms: Clostridium botulinum, perfringens, tetani and difficile
4. Laboratory program:
   - Collection, storage and proper transportation of organic products
   - Culture media
   - Seeding Bacteriology biological samples (urine, faeces, exudates, sputum, liquids)
   - Isolation and Identification of the major human pathogens.
   - Morphological characteristics and tinturiais characteristics (Gram stain)
   - Cultural Characteristics
   - Biochemical characteristics (galleries identification)
   - Antigenic structure (serological tests)

## Recommended reading


1. Murray P, Rosenthal K, Kobayashi G, Pfaller M. (2009). Microbiologia Médica. Elsevier Editora Ltda. Brasil.
2. Cowan M. K. (2012). Microbiology Fundamentals: A Clinical Approach. McGraw Education.
3. Pádua M. (2011). Patologia clínica para técnicos - Bacteriologia. LUSOCIÊNCIA Edições técnicas e científicas, Lda. Loures.
4. Levinson W. (2014). Microbiologia Médica e Imunologia. Artmed Editora.
5. Sousa J. C. (2005). Manual de Antibióticos Antibacterianos. Universidade Fernando Pessoa- Gráficos Reunidos. Porto.


## 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.

## Assessment methods

- Overall Evaluation 1 - (Regular, Student Worker) (Final, Supplementary, Special)
   - Final Written Exam - 60% (Evaluation of theoretical written exam. To get approval minimum grade 8, 5 values.)
   - Final Written Exam - 40% (Practical component in practical and written exam. To get approval minimum grade 8, 5 values.)

## Language of instruction

Portuguese, with additional English support for foreign students.

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## Electronic validation

| Hadassa Cristhina de Azevedo Soares dos Santos, Joao Pedro Afonso Rodrigues | Josiana Adelaide Vaz | Juliana Almeida de Souza | Adília Maria Pires da Silva Fernandes |
|---|---|---|---|
| 15-11-2022 | 16-11-2022 | 28-02-2023 | 04-03-2023 |

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