



INSTITUTO DE HIGIENE E
MEDICINA TROPICAL
DESDE 1902

MEDICAL BACTERIOLOGY

CU characterization:

CU name:

Medical bacteriology

Scientific area acronym:

Duration:

Semiannual

Working hours:

196h

Contact hours:

49h

ECTS:

7

Observations:

Mandatory CU

Teacher in charge and respective teaching load in the CU:

Prof.^a Doutora Isabel Couto (IHMT-NOVA)

Other teachers and respective teaching load in the CU:

Prof. Doutor Miguel Viveiros (IHMT-NOVA)

Prof. Doutora Liliana Rodrigues (IHMT-NOVA)

Prof. Doutor João Borges da Costa (IHMT-NOVA)

Inv.^a Doutora Maria Luísa Jorge Vieira (IHMT-NOVA)

Inv.^a Doutora Ana Armada (IHMT-NOVA)

Doutora Diana Machado (IHMT-NOVA)

Doutora Sofia Santos Costa (IHMT-NOVA)

Inv.^a Doutora Raquel Sá-Leão (ITQB-NOVA)

Prof. Doutor Paulo Paixão (NMS|FCM-NOVA)

Prof.^a Doutora Maria de Jesus Chasqueira (NMS|FCM-NOVA)

Dr.^a Cristina Toscano (NMS|FCM-NOVA)

Mestre Jorge Ramos (IHMT-NOVA)



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Intended learning outcomes (knowledge, skills and competences to be developed by the students):

In this curricular unit, students will acquire knowledge, skills, abilities and methods of analysis applied to research and laboratory diagnosis in Medical Bacteriology.

At the end of this unit, the students will be able to:

- Master the fundamentals and principles of medical bacteriology and their applications in diagnosis and applied research;
- Enumerate the main characteristics of bacteria causing human infections;
- Perform and critically evaluate experimental protocols for the application of laboratory diagnostic methods in medical bacteriology; describing their principles.

Syllabus:

- Clinical, epidemiological and therapeutic aspects of bacterial infections.
- The species concept in Bacteriology; main challenges and approaches.
- Description of the main methods used for laboratory diagnosis at medical bacteriology (isolation, identification and additional characterization).
- Characterization of the main bacterial biological agent(s) of human disease (including genomic, structural or physiological characteristics).
- Practical classes: Processing of samples for Ziehl-Neelsen staining of acid-fast bacilli; identification of Gram-positive cocci, Enterobacterales and other Gram-negative bacteria.
- Theoretical-practical classes: Microscopic observation of bacterial agents of bacterial agents of STDs; identification of *Leptospira* and *Borrelia*.

Evidence of the syllabus coherence with the CU intended learning outcomes:

Concepts and tools relevant for analysis and research in medical bacteriology will be presented in order to acquire scientific and professional skills on:

- The theoretical concepts of bacterial diseases and their agents, prevention, prophylaxis, diagnosis, treatment and epidemiological surveillance, taking into account the human host and its susceptibility to infection.
- The application of scientific methodology to improve performance in a conscious and independent way.
- The interpretation and integration of different strategies for laboratory diagnosis in medical bacteriology.

Teaching methodologies (including assessment):

- 1) Theoretical classes, based on slide show, accompanied by indication of complementary bibliography (34,5 contact hours).
- 2) Practical and theoretical-practical laboratory classes will include microscopic observation of different groups of bacteria, using several staining techniques and exemplification, execution and discussion of various identification methods (11,5 contact hours).



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- 3) Evaluation: students will be evaluated by two written tests, each with 25 multiple choice questions (5 options, only one correct) addressing the contents of the theoretical and practical classes, each contributing to 50% of the final score. Final approval upon a total of a > 9.5 grade (out of 20) in the sum of the two tests.

Evidence of the teaching methodologies coherence with the CU intended learning outcomes:

The curricular unit is based on theoretical and theoretical-practical and laboratory classes.

The theoretical classes, each corresponding to a bacteriology thematic and specific competence described in the program, will be presented with a context-review of the state of art and knowledge. These are formal expository lectures, based on the transmission of knowledge to the master students, adapted to the learning objectives. The students will receive all the necessary information in order to accomplish the objectives and receive theoretical skills suited for the achievement of the objectives of the practical works.

The laboratory theoretical-practical and practical classes, based on experimental protocols and tutorials, will provide knowledge on basic techniques of medical bacteriology. Teaching materials will be accompanied by biological material of our routine laboratory (biological samples, bacterial cultures, etc.) for the student to analyze and/or process, according to the protocols provided.

References for consultation / mandatory existence:

1. Barroso H, Meliço Silvestre A, Taveira N (Eds) (2014). Microbiologia Médica – Volumes I e II, Edições Lidel, Lisboa. ISBN: 9789727575763
2. Tille, P. M. Ed. (2022). Bailey & Scott's Diagnostic Microbiology. 15th Edition. Elsevier Mosby Saunders, St. Louis, EUA. ISBN: 9780323681056.
3. Murray, P.R., Rosenthal, K.S., Pfaller M.A. (2021). Medical Microbiology. 9th Edition. Elsevier Mosby Saunders, St. Louis, EUA. ISBN: 9780323673228
4. Scientific papers about specific themes, provided by the teachers.