SUBJECT TEACHING GUIDE

G158 - Medical Microbiology and Parasitology

Degree in Medicine

Academic year 2025-2026

1. IDENTIFYING DATA					
Degree	Degree in Medicine			Type and Year	Compulsory. Year 2
Faculty	Faculty of Medicine				
Discipline	Subject Area: Microbiology Diagnostic and Therapeutic Procedures				
Course unit title and code	G158 - Medical Microbiology and Parasitology				
Number of ECTS credits allocated	6	Term		Semester based (1)	
Knowledge Field	Medicine and odontology				
Web	https://moodle.unican.es/course/view.php?id=6958				
Language of instruction	Spanish	English Friendly	No	Mode of delivery	Face-to-face

Department	DPTO. BIOLOGIA MOLECULAR
Name of lecturer	FELIX JAVIER SANGARI GARCIA
E-mail	felix.sangari@unican.es
Office	Facultad de Medicina. Planta: + 1. DESPACHO (1118)
Other lecturers	ASUNCION SEOANE SEOANE RAUL FERNANDEZ LOPEZ MARTA ROBLEDO GARRIDO SERGIO GARCIA FERNANDEZ ZAIRA MOURE GARCIA JOSE ANTONIO MANSO GARCIA

4. OBJECTIVES

This course will introduce the students into the world of microbes and parasites. While most of the effort wil be directed towards bacteria, viruses, fungi and eukaryotic microbes and parasites will also be examined.
For each of the microbe categories, basic biological principles will be covered with a strong attention to molecular, genetic and genomic aspects. All this knowledge will be applied to identify, track, treat or prevent human diseases produced by microbes and parasites.
The principal human pathogens will be individually studied following a common scheme that includes biological description, mechanisms producing disease, methods for identification in the lab, treatment, prevention and epidemiology of the diseases.
The course includes a section of practical work in the microbiology lab were the students will acquire the skills of aseptic microbiological technique and safety in the lab, growing and enumeration of microbes, basic staining methods and microscopic observation, common physiological and biochemical tests with microbes and identification of bacteria using those tests.
Particular assignments intended to develop team-work and communication skills will also be included in this course.

6. SUBJECT PROGRAM	
CONTENTS	
1	Student work in this course is organized in: Lecture: 41 lectures of 55 minutes will cover all the course topics. Attendance to lectures is strongly recommended. Lecture topics are divided in 4 blocks: Some topics will need more than a lecture session. GENERAL MICROBIOLOGY 1. Microbiology and Parasitology. Concepts and Contents. The Microbial World. Taxonomy. Morphology. 2. Bacterial Structure. Bacterial Components. Bacterial Cell Division. Spores.Bacterial Genetics 3. Antimicrobials. Groups and Mechanisms of Action. 4. Antimicrobials. Resistance Mechanisms. 5. Mechanisms of Bacterial Pathogenicity. Adhesion and Invasion. Toxins. Host Defense Evasion. 6. Human Microbiota.
2	BACTERIOLOGY 7. Genus Staphylococcus 8. Genera Streptococcus and Enterococcus. 9. Listeria, Corynebacterium and other Grampositive bacili 10. Genus Neisseria. N. gonorrhea and N. meningitidis. 11. Enterobacteria. General Characteristics. Escherichia coli 12. Genera Salmonella and Yersinia. Other Medically Important Enterobacteria. 13. Genera Vibrio and Campylobacter 14. Genus Helicobacter. 15. Nonfermentative Gramnegative Bacilli. Genera Pseudomonas and Acinetobacter 16. Haemophilus and Other Fastidious Gram-Negative Rods: Bordetella, Francisella, Bartonella. 17. Genera Brucella and Legionella.. 18. Genus Mycobacterium. General Concepts. M. Tuberculosis. 19. Other Mycobacteria. M. leprae. 20. Anaerobic Bacteria. Genus Clostridium. Nontoxigenic Anaerobes. 21. Spirochaetes. Genus Treponema. Genera Borrelia and Leptospira. 22. Mycoplasma and Ricketsia 23. Chlamydia.
3	VIROLOGY 24. General Virology. Virus Classification and Life Cycles. Pathogenesis. Virus Diagnostics. Antivirals 25. Herpesvirus: Classification. Herpes Simplex Virus 1 and 2. Cytomegalovirus. Varicela-Zoster Virus. Epstein-Barr Virus. HV6 and HV8. 26. Poxvirus and Papovavirus: Papiloma and Polyoma 27. Parvovirus Adenovirus and Picornavirus: Enterovirus and Rinovirus 28 Rotavirus, Norovirus and other diarrhaea causing virus. 29. Orthomyxovirus. Influenza virus 30. Paramyxovirus: Parainfluenza Virus, Mumps and Measles Virus. Pneumovirus: Respiratory Syncitial Virus. Coronavirus 31. Hepatitis Viruses. 32. Retrovirus, Human Immunodeficiency Virus (HIV) 33. Arbovirus. Encephalitis and Hemorrhagic Fever Viruses.

4	MYCOLOGY AND PARASITOLOGY 34. General Mycology. Fungi Causing Superficial and Subcutaneous Mycoses 35. Fungi Causing Systemic and Opportunistic Mycoses. Genera Candida and Aspergillus, Genus Pneumocystis. 36. General Characteristics of Parasites. Haematic Protozoans. Genus Plasmodium. 37. Intestinal and Genital Protozoans. Genera Entamoeba, Giardia and Cryptosporidium. Genus Trichomonas. 38. Other Medically Important Protozoans. Genus Toxoplasma. Genus Leishmania. 39. Helminths: Trematodes and Cestodes. Genus Fasciola, Genera Taenia and Echinococcus. 40. Helminths: Nematodes. Genera Ascaris, Trichuris, Enterobius and Trichinella.
5	Laboratory work will be developed in nine, 2 hour sessions. Laboratory attendance is mandatory for all enrolled studentsLaboratory work schedule Lab I: Principles of lab safety. Basic microbiological techniques. Immunodiagnosis in microbiology. Bacterial viruses. Food and environmental microbiology. (4 days, 8 hours) Lab II. Microbiological diagnosis. Enterobacterial identification. Microbiological diagnostic of urinary and respiratory infections. Identification of Haemophillus and Mycobacteria (4 days, 8 hours) Lab III. Microbiological diagnostic of fungal and parasitic infections. (1 day, 2 hours)
6	Evaluation sessions There will be two written exams, each 90 minutes long, for the lecture topics. And another two written exams for the laboratory work
7	Oral presentation: Students, divided in teams should prepare and present at least one topic and attend to another three sessions of students oral presentations. This activity is also mandatory for all students.

7. ASSESSMENT METHODS AND CRITERIA

Description	Type	Final Eval.	Reassessn	%
Lecture Exam I Written exam containing both multiple option questions and short answer questions related to lessons 1-21 in lecture schedule.	Written exam	No	Yes	45,00
Lecture Exam II Written exam containing both multiple option questions and short answer questions related to lessons 22-41 in lecture schedule.	Written exam	No	Yes	35,00
Oral presentation: Oral presentations will be graded by instructor upon delivery. The same grade will apply for all members in a team.	Others	No	No	5,00
Laboratory Exams There will be two written laboratory exam tests during the teaching period. Grading conditions are described below in the Observations section	Others	No	No	15,00
TOTAL				100,00

Observations

There will be two written tests for the theoretical content of the course. First test includes lectures 1-23 and the second test lectures 24-40. It is required to approve both tests in order to pass the course.

To approve the laboratory unit, students have to attend to all the lab sessions and pass two exams on laboratory work.
Oral presentations will be graded by instructors upon delivery. The same grade will apply for all members in a team.

Breakdown of points for the three parts of the course is as follows:

Lecture exams	8 points
laboratory exams	1.5 points
Oral presentation	0.5 points

To approve the course it is required to approve at least 40% of the content of the lectures written tests.

Observations for part-time students

same criteria will apply

8. BIBLIOGRAPHY AND TEACHING MATERIALS

BASIC

Medical Microbiology, 9th ed. Murray, PR et al. Elsevier, 2020.
Microbiología Médica Básica, 1ª ed. Murray, PR . Elsevier, 2018.
Murray. Microbiología Médica Básica. Fundamentos y casos clínicos. 2ª ed. Murray PR. Elsevier. 2024.