



## Information about the subject

**Degree:** Bachelor of Science Degree in Medicine

**Faculty:** Faculty of Medicine and Health Sciences

**Code:** 340307 **Name:** Medical Microbiology and Parasitology

**Credits:** 6,00 **ECTS Year:** 3 **Semester:** 1

**Module:** Diagnostic and therapeutical procedures.

**Subject Matter:** Diagnostic procedures **Type:** Compulsory

**Field of knowledge:** Health Science

**Department:** Biomedical Sciences

**Type of learning:** Classroom-based learning

**Languages in which it is taught:** Spanish

### Lecturer/-s:

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## Module organization

### Diagnostic and therapeutical procedures.

Subject Matter	ECTS	Subject	ECTS	Year/semester
Diagnostic procedures	39,00	Basic Immunology	3,00	1/2
		Functional Assessment	6,00	This elective is not offered in the academic year 24/25
		Genetics	3,00	1/1
		Introduction to Medicine	3,00	1/2
		Laboratory of Diagnostic Tests	3,00	5/1
		Medical Microbiology and Parasitology	6,00	3/1
		Pathological Anatomy	6,00	2/2
		Physiological Records and Functional Tests	3,00	2/2
		Radiodiagnostic and Imaging Techniques	6,00	3/1
Therapeutic procedure	27,00	Anaesthesia and Resuscitation	3,00	5/1
		Biotechnology	6,00	This elective is not offered in the academic year 24/25
		General and Special Pharmacology	9,00	3/2



Therapeutic  
procedure

General Procedures of  
Intervention

6,00

This elective is not  
offered in the  
academic year  
24/25

Rehabilitation and  
Physical Therapy

3,00

4/2



## Learning outcomes

At the end of the course, the student must be able to prove that he/she has acquired the following learning outcomes:

- R1 Knowing the general characteristics of bacteria, viruses, fungi and parasites.
- R2 Recognize what microorganisms are found in normal and pathogenic flora in: respiratory, digestive, genitourinary tissue and skin.
- R3 Knowing the characteristics of the host-microbe relationship: how microbial colonization of host surfaces occurs, and how microorganisms invade and spread.
- R4 Knowing the characteristics of the host-microbe relationship: how microbial colonization of host surfaces occurs, and how microorganisms invade and spread.
- R5 Knowing the characteristics of the host-microbe relationship: how microbial colonization of host surfaces occurs, and how microorganisms invade and spread.
- R6 Learn the methodology of in vitro culture and types of growth mediums most used in the study of bacteria.
- R7 Recognize the diagnostic and therapeutic value of molecular biology techniques.
- R8 Recognize the diagnostic and therapeutic value of molecular biology techniques.
- R9 Recognize the diagnostic and therapeutic value of molecular biology techniques.
- R10 Understanding the mechanisms of action of antimicrobial drugs, as well as tests for determining bacterial susceptibility to antimicrobial drugs and the mechanisms of bacterial resistance to antimicrobials.
- R11 Understanding the mechanisms of action of antimicrobial drugs, as well as tests for determining bacterial susceptibility to antimicrobial drugs and the mechanisms of bacterial resistance to antimicrobials.
- R12 Meet the microbial spectrum in the etiology of bloodstream infections, respiratory tract infections, central nervous system, the genitourinary tract, gastrointestinal tract, and skin infections and soft tissue.
- R13 Know how to ask for the correct study if a viral, fungal, parasitic aerobic, anaerobic or mycobacterial infection is suspected.
- R14 Select and obtain suitable clinical samples for diagnosis of infectious diseases by bacteria, parasites, fungi and viruses.



- R15 Know the recommendations for the transport and storage of clinical specimens.
- R16 Recognize what antimicrobial to use following the results of sensitivity studies.
- R17 Interpret the results of microbiological studies for bacteria, viruses, fungi and parasites. Determine which pathogens can potentially contaminate sterile samples.
- R18 Identify the phase of the infectious disease of the patient in respiratory infections, infections of the nervous system and sexually transmitted diseases (Lues serology) after findings of the serological study.
- R19 Know how to solicit rapid tests in the diagnosis of sexually transmitted diseases, respiratory infections, bacterial infections of the central nervous system, gastroenteritis, parasites, herpes virus infections, invasive mycosis, viral hepatitis and HIV infection.



## Competencies

Depending on the learning outcomes, the competencies to which the subject contributes are (please score from 1 to 4, being 4 the highest score):

BASIC		Weighting			
		1	2	3	4
CB1	Students have demonstrated to possess and understand knowledge in a study area that starts from the base of the general secondary education, and is usually found at a level that, while supported by advanced textbooks, also includes some aspects that involve knowledge from the forefront of their field of study				X
CB2	Students know how to apply their knowledge to their job or vocation in a professional way and possess the competences that are usually demonstrated through the elaboration and defense of arguments and the resolution of problems within their area of study				X
CB3	Students have the ability to collect and interpret relevant data (usually within their area of study) to make judgments that include a reflection on relevant social, scientific or ethical topics				X
CB4	Students can pass on information, ideas, problems and solutions to both a specialized and non-specialized audience				X
CB5	Students have developed the learning skills needed to undertake further studies with a high degree of autonomy				X
GENERAL		Weighting			
		1	2	3	4
CG1	Recognizing the essential elements of the medical profession, including ethical principles, legal responsibilities, and patient-centered professional exercise	X			
CG2	Understanding the importance of such principles for the benefit of the patient, society and profession, with special attention to professional secrecy	X			
CG3	Knowing how to apply the principle of social justice to professional practice and understanding the ethical implications of health in a changing global context	X			



CG4	Developing professional practice with respect to patient autonomy, beliefs and culture	X			
CG5	Recognizing the limitations themselves and the need to maintain and update their professional competence, giving special importance to the autonomous learning of new knowledge and techniques and to the motivation for quality			X	
CG6	Developing professional practice with respect for other health professionals, acquiring teamwork skills		X		
CG12	Understanding the basis of action, indications and efficacy of therapeutic interventions, based on available scientific evidence			X	
CG15	Having the ability to make an initial diagnostic judgment and establish a reasoned diagnostic strategy				X
CG18	Indicating the most appropriate therapeutics of the most prevalent and chronic acute processes, as well as terminally ill patients			X	
CG21	Listening to carefully, obtain and synthesize relevant information about the problems afflicting the patient and understand the content of this information			X	
CG22	Writing medical histories and other medical records in an understandable way to outsiders			X	
CG23	Communicating effectively and clearly, both orally and in writing, with patients, family members, media workers and other professionals			X	
CG30	Basic knowledge of the National Health System and health legislation	X			
CG32	Knowing how to use information and communication technologies in clinical, therapeutic, preventive and research activities			X	
CG33	Maintaining and using records with patient information for further analysis, preserving data confidentiality				X

SPECIFIC		Weighting			
		1	2	3	4
CE61	Assessing the risk-benefit ratio of diagnostic and therapeutic procedures				X
CE62	Knowing the indications of biochemical, haematological, immunological, microbiological, anatomopathological and imaging tests		X		



CE64	Knowing the basics of microbiology and parasitology				X
CE65	Knowing the main techniques of microbiological and parasitological diagnosis and interpret the results				X
CE77	Knowing how to obtain and process a biological sample for study using the different diagnostic procedures				X
CE78	Knowing how to interpret the results of the laboratory's diagnostic tests			X	

TRANSVERSAL		Weighting			
		1	2	3	4
CT1	Analytical and synthesis capacity			X	
CT2	Planification and organization capacity		X		
CT6	Manage information capacity			X	
CT7	Solving problems				X
CT8	Making decisions			X	
CT9	Team work			X	
CT10	Interdisciplinary team work			X	
CT12	Interpersonal relationship skills			X	
CT14	Critical reasoning				X
CT16	Individual learning				X
CT18	Creativity	X			
CT19	Leadership	X			
CT24	Ability to take responsibility		X		





CT25 Autocriticism capacity

x

CT26 Knowing how to value personal action and know your own skills and limitations

x

## Assessment system for the acquisition of competencies and grading system

Assessed learning outcomes	Granted percentage	Assessment method
R1, R2, R3, R4, R5, R10, R11, R12, R13, R14	70,00%	Tests
R2, R6, R7, R8, R9, R14	20,00%	Practices
R12, R13, R15, R16, R17, R18, R19	10,00%	Practice exam

### Observations

Of the multiple choice tests, 60% correspond to the final exam and the remaining 10% to 3 midterms that will be carried out throughout the semester.

Of the practices, 5% corresponds to resolution of clinical cases, another 5% to the completion of the task: Database, and the remaining 10% to the assessment of the practices carried out in the laboratory of our faculty.

Minimum requirement of the subject: the student must obtain a grade equal to or greater than 4.5 in the exam (multi-choice questions). If not, the rest of the merits will not be valued.



## MENTION OF DISTINCTION:

In accordance with the regulations governing the assessment and grading of subjects in force at UCV, the distinction of "Matrícula de Honor" (Honours with Distinction) may be awarded to students who have achieved a grade of 9.0 or higher. The number of "Matrículas de Honor" (Honours with Distinction) may not exceed five percent of the students enrolled in the group for the corresponding academic year, unless the number of enrolled students is fewer than 20, in which case a single "Matrícula de Honor" (Honours with Distinction) may be awarded. Exceptionally, these distinctions may be assigned globally across different groups of the same subject. Nevertheless, the total number of distinctions awarded will be the same as if they were assigned by group, but they may be distributed among all students based on a common criterion, regardless of the group to which they belong. The criteria for awarding "Matrícula de Honor" (Honours with Distinction) will be determined according to the guidelines stipulated by the professor responsible for the course, as detailed in the "Observations" section of the evaluation system in the course guide.

## Learning activities

The following methodologies will be used so that the students can achieve the learning outcomes of the subject:

M1	Masterclass
M2	Problems resolution and practical cases
M4	Content presentations by teacher
M5	Knowledges and skills explanation
M6	Laboratory practices
M7	Oral presentation by student
M8	Group activities supervised by professor
M9	Knowledge acquirance through student interaction and activity
M11	Personalised attention by professor
M12	Tests to understand the level of knowledge acquirance and skills



- M13 Written work
- M14 Online activity on e-learning
- M15 Personal study
- M16 Information research
- M17 Discussion and solving issues in group
- M18 Work in team
- M19 Group work for searching, discussion and information research
- M21 Supervision of clinical histories



## IN-CLASS LEARNING ACTIVITIES

	LEARNING OUTCOMES	HOURS	ECTS
Theory class M1, M2, M4, M5	R1, R2, R3, R4, R7, R8, R10, R11, R12, R13, R18, R19	45,00	1,80
Seminar and group practices M6, M7, M8, M9, M17	R5, R6, R9, R10, R14, R15, R16, R17	20,00	0,80
Practices in small groups M8, M9, M17	R5, R6, R9, R10, R14, R15, R16, R17	4,00	0,16
Tutoring M11	R5, R6, R9, R10, R14, R15, R16, R17	4,00	0,16
Evaluation M12	R1, R2, R3, R4, R5, R6, R7, R8, R9, R10, R11, R12, R13, R14, R15, R16, R17, R18	2,00	0,08
<b>TOTAL</b>		<b>75,00</b>	<b>3,00</b>

## LEARNING ACTIVITIES OF AUTONOMOUS WORK

	LEARNING OUTCOMES	HOURS	ECTS
No attendance M15, M16	R1, R2, R3, R4, R5, R6, R7, R8, R9, R10, R11, R12, R13, R14, R15, R16, R17, R18, R19	75,00	3,00
<b>TOTAL</b>		<b>75,00</b>	<b>3,00</b>



## Description of the contents

Description of the necessary contents to acquire the learning outcomes.

### Theoretical contents:

Content block	Contents
SECTION I: GENERAL MICROBIOLOGY	Introduction to microbiology: general characteristics of man's pathogenic microorganisms and parasites. Normal microbial flora in man. Study of Health Care-Associated Infections (HAI) and outbreak study. Definition of Decontamination, disinfection and sterilization. Antiseptics and disinfectants. Inactivation of emerging and antibiotic-resistant pathogens. Sterilization of devices. Microbiological diagnosis: direct and indirect diagnostic techniques
SECTION II: BACTERIAS	Classification, structure and replication of bacteria. Gram-positive cocci: Staphylococcus, Streptococcus, Enterococcus. Gram-positive bacillus: Bacillus, Listeria, Corynebacterium. Gram-negative cocci (Neisseria), enterobacterias y bacilos Gramnegativos no fermentadores. Vibrio y Aeromonas. Campylobacter, Helicobacter. Haemophilus. Other gram-negative bacillus: Bordetella, Francisella. Legionella. Espiroquetas (Treponema, Borrelia and Leptospira). Anaerobic: Gram-positive anaerobic bacillus that form spores, Gram-positive anaerobic bacteria that do not form spore, Gram-negative anaerobic bacteria. Mycobacterium and Nocardia. Other bacteria: Chlamydaceae, Mycoplasma, Ureaplasma, Rickettsia, Ehrlichia, Anaplasma and Coxiella. Spirochaete. Antibiotics. Concept of bacterial sensitivity to antimicrobial drugs. Mechanisms of bacterial resistance. Testing for bacterial antimicrobial susceptibility.



## SECTION III: VIRUS

Classification, structure and replication of virus. DNA Virus: adenoviridae, human herpes virus, poxviridae (smallpox, contagious molluscum), parvoviridae (erythema infectiosum, etc), papillomavirus (warts, tumors), etc. RNA Virus: picornaviridae (enteroviridae, rinoviridae), coronaviridae, paramixoviridae (measles, parainfluenza, respiratory syncytial virus, mumps), ortomixoviridae (flu), rabdoviridae (rage), reoviridae (rotaviridae), togaviridae and flaviviridae (rubella virus transmitted by arthropods). Hepatitis virus and HIV.

## SECTION IV: FUNGI

Classification, structure and replication of fungi. Fungi: superficial, cutaneous and subcutaneous mycoses. Fungi and opportunistic systemic mycoses.

## SECTION V: PARASITES

Classification, structure and replication of parasites. Parasites: Protozoa. Pests: Nematodes, Trematodes, Cestodes. Parasites: arthropods. Role of arthropods as vectors of infectious diseases.

## Temporary organization of learning:

Block of content	Number of sessions	Hours
SECTION I: GENERAL MICROBIOLOGY	8,50	17,00
SECTION II: BACTERIAS	13,00	26,00
SECTION III: VIRUS	6,00	12,00
SECTION IV: FUNGI	6,00	12,00
SECTION V: PARASITES	4,00	8,00



## References

- Murray PR, Rosenthal KS, Pfaller MA. **Microbiología Médica. Elsevier Mosby**
- W. John Spicer. "Microbiología clínica y enfermedades infecciosas" Texto y atlas en color. Elsevier.
- Mandell, Bennett y Dolin. Principles and Practices of Infectious Diseases. Elsevier Churchill Livinstone.
- Sanfod Guide.Gilbert DN, Moellering RC, Eliopoulis GM, Saag MS, Chambers HGThe Sanford Guide to Antimicrobial Therapy.
- Cliniguia. Actualización de diagnóstico y terapéutica. Manual de Medicina



## Addendum to the Course Guide of the Subject

Due to the exceptional situation caused by the health crisis of the COVID-19 and taking into account the security measures related to the development of the educational activity in the Higher Education Institution teaching area, the following changes have been made in the guide of the subject to ensure that Students achieve their learning outcomes of the Subject.

**Situation 1: Teaching without limited capacity** (when the number of enrolled students is lower than the allowed capacity in classroom, according to the security measures taken).

In this case, no changes are made in the guide of the subject.

**Situation 2: Teaching with limited capacity** (when the number of enrolled students is higher than the allowed capacity in classroom, according to the security measures taken).

In this case, the following changes are made:

### 1. Educational Activities of Onsite Work:

All the foreseen activities to be developed in the classroom as indicated in this field of the guide of the subject will be made through a simultaneous teaching method combining onsite teaching in the classroom and synchronous online teaching. Students will be able to attend classes onsite or to attend them online through the telematic tools provided by the university (videoconferences). In any case, students who attend classes onsite and who attend them by videoconference will rotate periodically.

In the particular case of this subject, these videoconferences will be made through:

☒ Microsoft Teams

☐ Kaltura





## **Situation 3: Confinement due to a new State of Alarm.**

In this case, the following changes are made:

### **1. Educational Activities of Onsite Work:**

All the foreseen activities to be developed in the classroom as indicated in this field of the guide of the subject, as well as the group and personalized tutoring, will be done with the telematic tools provided by the University, through:

☒ Microsoft Teams

☐ Kaltura

Explanation about the practical sessions:



## 2. System for Assessing the Acquisition of the competences and Assessment System

### ONSITE WORK

#### Regarding the Assessment Tools:

☒ The Assessment Tools will not be modified. If onsite assessment is not possible, it will be done online through the UCVnet Campus.

☐ The following changes will be made to adapt the subject's assessment to the online teaching.

Course guide		Adaptation	
Assessment tool	Allocated percentage	Description of the suggested changes	Platform to be used

The other Assessment Tools will not be modified with regards to what is indicated in the Course Guide.

#### Comments to the Assessment System: