

**COURSE DATA****Data Subject**

Code	34103
Name	Clinical Microbiology
Cycle	Grade
ECTS Credits	4.5
Academic year	2019 - 2020

Study (s)

Degree	Center	Acad. year	Period
1201 - Degree in Pharmacy	Faculty of Pharmacy and Food Sciences	5	First term

Subject-matter

Degree	Subject-matter	Character
1201 - Degree in Pharmacy	40 - Clinical microbiology	Optional

Coordination

Name	Department
RICO VIDAL, HORTENSIA	275 - Microbiology and Ecology

SUMMARY

The course aims to give an overview of the microorganisms that cause infectious diseases in humans, with special emphasis on bacteria (prokaryotic organisms), although there will be a general review of fungal (eukaryotic microorganisms) and viruses.

The major groups within each category (bacteria, fungi and viruses) and the diseases caused by them, classified according to the organs and / or systems affected, are described.

The course also describes the laboratory methods and techniques currently available for identification (diagnosis) of disease-causing microorganisms, and the methods used to determine the pattern of susceptibility / resistance of these microorganisms, once identified, to antimicrobial agents currently available



PREVIOUS KNOWLEDGE

Relationship to other subjects of the same degree

There are no specified enrollment restrictions with other subjects of the curriculum.

Other requirements

It is recommended to have previously passed the subjects Microbiology, Microbiological and Parasitological Analysis, Immunology and Anatomy.

COMPETENCES (RD 1393/2007) // LEARNING OUTCOMES (RD 822/2021)

1201 - Degree in Pharmacy

- To know the general principles of the laboratory diagnosis of infectious diseases.
- To know the basic microbiological, immunological and molecular biology techniques used for the diagnostic of infectious diseases.
- To know the infectious diseases that may affect the different organs and systems of the human body.
- To know about all the aspects related to the determination of susceptibility/resistance of pathogenic microorganisms to the different chemotherapeutic agents commonly used in clinical practice.
- To know all the main groups of microorganisms, bacteria, fungi and viruses, that cause disease in humans.

LEARNING OUTCOMES (RD 1393/2007) // NO CONTENT (RD 822/2021)

The acquisition of the skills described above will be reflected in a number of capacities and qualifications that will make the student to be self-sufficient to:

- Develop reasoning and theoretical and practical arguments about the role of microorganisms as causative agents of infectious diseases
- Design and conduct experiments for the detection, isolation and identification of microorganisms in different pathological products
- Be able to determine the sensitivity and resistance of microorganisms isolated from the different pathological products to antibiotics commonly used in clinical practice
- Understand future developments that are occurring in the field of Clinical Microbiology



DESCRIPTION OF CONTENTS

1. Introduction

CHAPTER 1. Main characteristics of the major groups of microorganisms with pathogenicity for humans: viruses, bacteria and fungi. Features.

CHAPTER 2. Pathogenesis of infectious diseases.

2. Diagnosis of Infectious Diseases. Microbiological Techniques

CHAPTER 3. Diagnosis of infectious diseases. Basic Principles.

CHAPTER 4. Diagnosis of infectious diseases I: phenotypic methods. Microscopic examination, sample processing for culture and interpretation thereof. Procedures for the identification of microorganisms.

CHAPTER 5. Diagnosis of infectious diseases II: no phenotypic methods. Direct antigen detection: methods and indications. Molecular diagnostic techniques. Immunological methods: antibody detection. proteomic methods

3. Etiologic diagnosis of Infectious Syndromes

CHAPTER 6. Blood culture

CHAPTER 7. Urinary Tract Infections

CHAPTER 8. Gastrointestinal tract infections

CHAPTER 9. Sexually transmitted infections

CHAPTER 10. Infections of the upper and lower airways

CHAPTER 11. CNS Infections

CHAPTER 12. Clinical Syndromes and laboratory diagnosis of fungal diseases

4. Antimicrobial agents

CHAPTER 13. Antimicrobial susceptibility. Acquired resistance in bacteria of clinical relevance

**5. General Procedures Organization on Clinical Microbiology Laboratory**

CHAPTER 14. Quality assurance in clinical microbiology laboratories. General procedures of organization: Organization of laboratory services portfolio, sampling, transport and storage, reception and rejection criteria, report results, sample preservation, waste management

CHAPTER 15. Administrative aspects of a clinical microbiology laboratory: Accreditations and certifications, Inspections, Risk Management, Quality Control.

WORKLOAD

ACTIVITY	Hours	% To be attended
Theory classes	29,00	100
Laboratory practices	10,00	100
Seminars	2,00	100
Development of individual work	5,00	0
Study and independent work	25,00	0
Readings supplementary material	2,50	0
Preparation of evaluation activities	10,00	0
Preparing lectures	15,00	0
Preparation of practical classes and problem	10,00	0
TOTAL	108,50	

TEACHING METHODOLOGY**Theory:**

Lectures for the presentation by the teacher of the most important concepts and contents of each issue in order for the student to acquire the knowledge related to the subject. Student participation will be encouraged.

Practical Classroom (workshops, problems):

The seminars will be used to enhance teamwork and improve oral presentation, by conducting theoretical and practical training to complement that is acquired in class work, and also to make another series of complementary activities of different types (study of cases, management of scientific literature, and discussion of current issues).

Laboratory and Computer Sessions:



The aim is to consolidate the theoretical knowledge, through the practical application thereof. The teacher will present the objectives, report on material handling, monitor job performance and help the interpretation of the results.

Tutorial Sessions:

Students come to them in small groups. In them, the teacher will evaluate the learning process of students in a global way. Equally, the tutorials will serve to resolve all doubts that have arisen over classes and guide students on the methods of work more useful for the resolution of the problems they may have. The teacher can raise issues and problems specific to the needs of students.

EVALUATION

Students will be assessed on their theoretical knowledge through a test/exam representing 80% of the final grade. The minimum grade to pass the course will be 5 out of 10.

In addition, the exam must be balanced and without serious deficiencies in concepts or important parts of the subject.

The assessment of laboratory sessions will contribute to the final grade by 20% and it is required at least to obtain a score of 5 out of 10 to pass the course. The mark for laboratory sessions will include a test/exam, and mandatory attendance.

If the student does not pass the theoretical part of the course but has passed the practical part will save the note for the next two academic years

REFERENCES

Basic

- MICROBIOLOGÍA MÉDICA. 7ª Ed.
Murray, P.R., Pfaller, M.A. y Rosenthal, K.S.
Editorial Elsevier, 2013
- KONEMAN. DIAGNÓSTICO MICROBIOLÓGICO. 6ª ED.
Winn, W.C., Allen, S.D., Janda, W.M., Koneman, E.W., Procop, G.W., Schreckenberger, P.C. y Woods, G.L.
Editorial Médica Panamericana, 2008



- BAILEY & SCOTT. DIAGNOSTICO MICROBIOLOGICO 12ª ED.
Forbes, B. A., Sahm, D.F. y Weissfeld, A.S.
Editorial Médica Panamericana, 2009.
- MICROBOIOLOGIA Y PARASITOLOGÍA CLINICA.
Prats, G.
Editorial Médica Panamericana, 2013

Additional

- MIMS MEDICAL MICROBIOLOGY. 5ª ED. Goering, R.V., Dockrell, H.M., Zuckerman, M. , Roitt, I.M., Chiodini, P.L.
Editorial Elsevier, 2013

ADDENDUM COVID-19

This addendum will only be activated if the health situation requires so and with the prior agreement of the Governing Council

English version is not available