

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

<b>Code</b>	34287
<b>Name</b>	Ocular biology
<b>Cycle</b>	Grade
<b>ECTS Credits</b>	6.0
<b>Academic year</b>	2019 - 2020

**Study (s)**

<b>Degree</b>	<b>Center</b>	<b>Acad. year</b>	<b>Period</b>
1207 - Degree in Optics and Optometry	Faculty of Physics	1	First term

**Subject-matter**

<b>Degree</b>	<b>Subject-matter</b>	<b>Character</b>
1207 - Degree in Optics and Optometry	3 - Biology	Basic Training

**Coordination**

<b>Name</b>	<b>Department</b>
ALBEROLA ENGUIDANOS, JUAN ANTONIO	275 - Microbiology and Ecology
MUÑOZ COLLADO, CARLOS	275 - Microbiology and Ecology

**SUMMARY****Objectives:****General objectives**

To train the Optics-Optometry student in the basics of the microbial world and its importance to human eye health, studying the pathogenesis of ocular infections, the role of microorganisms and ocular tissues, as a basis for understanding the clinical course, treatment and prevention. Knowing infectious agents involved in eye infections and their control procedures. Understanding the mechanisms of ocular immune response and its importance in maintaining the health of the eye and adnexa.

**Specific objectives**

To know the structural and functional characteristics of bacteria, viruses and eukaryotic microorganisms responsible for eye infections. To train the student in the cultivation and practical handling of microorganisms in the laboratory. Acquire criteria sanitizing, sterilization and control of different scales to avoid the risk of eye infections, especially in contact lens wearers. Know the main groups of drugs used in each case detailing antimicrobial mechanisms of action, resistance and side effects eye level.



## PREVIOUS KNOWLEDGE

### Relationship to other subjects of the same degree

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

### Other requirements

No existen requisitos ni recomendaciones previas

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

### 1207 - Degree in Optics and Optometry

- Knowing how to apply the knowledge acquired to professional activity, knowing how to solve problems and develop and defend arguments.
- Being able to gather and interpret relevant data to make judgments.
- Being able to transmit information, ideas, problems and solutions to both a specialized and non-specialized audience.
- Development of learning skills necessary to undertake further studies with a high degree of autonomy.
- To know the cell structure, embryonic development and organogenesis.
- To determine the development of the visual system.
- To recognize with macroscopic and microscopic methods the morphology and structure of tissues, organs and systems of the human body.
- To know the different microorganisms involved in diseases of the visual system.
- To know the principles and bases of the biological processes involved in the normal functioning of the visual system.
- To know the composition and structure of the molecules that make up living beings.
- To apply biochemical knowledge to the eye and the vision process.
- Knowledge of the structure and function of animal cells and tissues as well as systems related to the visual system.
- Ability to identify the different areas of the visual organ under the microscope.
- To understand the transformations of some biomolecules in others.
- To study the molecular bases of the storage and expression of biological information.



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

Competencies or skills to be acquired:

Be able to assist in the early detection of infectious eye and prevent avoidable risks and consequences. Participate directly as health educators capable of implementing control procedures of the microorganisms in the practice of contact lens fitting. Ability to interpret data from some laboratory tests. Being able to maintain a fluid communication of information obtained in their observations with other eye care professionals.

## DESCRIPTION OF CONTENTS

### 1. Health and sickness

### 2. Introduction to the pathogenesis of infectious diseases and ocular semiology

### 3. Introduction to ocular biology

### 4. Generalities, history and applications of Microbiology

### 5. Eukaryotic and prokaryotic cells.

### 6. Bacterial Genetics

### 7. Bacterial physiology

### 8. Introduction to Virology

### 9. Introduction to Medical Mycology



**10. Introduction to Medical Parasitology**

**11. Study of the microbiota of the healthy eye**

**12. Introduction to Immunology**

**13. Protocols for microbiological diagnosis of eye infections I**

**14. Protocols for microbiological diagnosis of eye infections II. Direct diagnosis**

**15. Protocols for the microbiological diagnosis of eye infections III. Indirect Diagnosis**

**16. Eye infections produced by Gram-positive bacteria**

**17. Eye infections caused by Gram-negative bacteria**

**18. Eye infections caused by Chlamydia and Mycobacteria**

**19. Eye infections caused by DNA Virus**

**20. Eye infections caused by RNA viruses**

**21. Fungi as etiological agents that produce eye infections**

**22. Study of eye infections caused by parasites**

**23. Tutorials****24. practices****WORKLOAD**

ACTIVITY	Hours	% To be attended
Theory classes	45,00	100
Tutorials	10,00	100
Laboratory practices	5,00	100
Study and independent work	45,00	0
Readings supplementary material	10,00	0
Preparation of evaluation activities	15,00	0
Preparing lectures	10,00	0
Preparation of practical classes and problem	10,00	0
<b>TOTAL</b>	<b>150,00</b>	

**TEACHING METHODOLOGY****English version is not available****EVALUATION**

Evaluation and assessment criteria:

Attendance and participation: 10% (more than 80% attendance of lectures and seminars)

Continuous assessment: 30% (seminars)

Theoretical and practical examination 60%

The evaluation of the workshops will be a test with 30 multiple choice questions to be held at the end of the series (A and B seminars on mentoring group). Apply a correction of random 1/4.

The practical examination will consist of 30 multiple choice questions (apply a correction of random 1/4) and 3 questions.



## REFERENCES

### Basic

- 1. MURRAY,P.R., ROSENTHAL, K.S. y PFALLER, M.A. Microbiología médica. 5ª edición. Elsevier Mosby 2006.
- 2. SEAL, D. y PLEYER, U. Ocular Infection. 2ª ed. Informa Health Care, USA. 2007.
- 3. PRESCOTT. HARLEY Y KLEIN. Microbiología. Ed. Mc Graw-Hill. Interamericana 2008.
- 4. TORTORA,G.J., FUNKE,B.R. y CASE, C.L., Introducción a la Microbiología. 9ª ed. Panamericana. 2007.

## 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**