UNIVERSITAT POLITÈCNICA DE CATALUNYA
BARCELONATECH

Course guide
370046 - INTERAC - Interactions Between Microorganisms and Contact Lenses

Last modified: 28/06/2023

Unit in charge:	Terrassa School of Optics and Optometry
Teaching unit:	731 - OO - Department of Optics and Optometry.

Degree:	BACHELOR'S DEGREE IN OPTICS AND OPTOMETRY (Syllabus 2020). (Optional subject).

Academic year: 2023   **ECTS Credits:** 3.0   **Languages:** Catalan, Spanish

LECTURER

Coordinating lecturer:	Morato Farreras, Jordi (http://futur.upc.edu/JordiMoratoFarreras)
Others:	Morato Farreras, Jordi (http://futur.upc.edu/JordiMoratoFarreras)

PRIOR SKILLS

To follow the course smoothly, students must have previous knowledge acquired during biology courses taken in high school and should have studied general and ocular microbiology matter.

REQUIREMENTS

Previous studies on general and ocular microbiology required.

TEACHING METHODOLOGY

15 hours of theory in large group + 24 hours of practical sessions in small group (12 hours per group) + 4 hours of presentation of work.
27 hours of cooperative learning.

Complementing and recalling the knowledge gained in General and Ocular Microbiology, recalling aseptic techniques, sterilization and disinfection will affect all aspects of this subject in general hygiene, especially those that refer to the contact lenses.
To facilitate the acquisition of these skills, students are required to work in groups. In small groups (two people), the work will be supervised and managed by teachers, as previously explained the basics of the presentations and the structure must have jobs.

Students must develop the ability to work in teams, searching and managing information optimally, defending their point of view and making critical reasoning, planning working hours and ultimately laying the foundations to become a good professional optics and optometry, especially in the field of contact lenses.

LEARNING OBJECTIVES OF THE SUBJECT

Describe the interactions of microorganisms with contact lenses in the processes of adhesion, changes in the structure eye contact-lens and resistance to antimicrobial treatments (disinfectants) and address a comprehensive approach to risk prevention microbial the use of contact lenses.

STUDY LOAD

Type	Hours	Percentage
Self study	45,0	60.00
Hours medium group	22,5	30.00
Hours small group	7,5	10.00

Total learning time: 75 h

CONTENTS

Part A. MICROBIAL INTERACTIONS WITH EYE STRUCTURES AND CONTACT LENSES

Description:
A1 ST. Microorganisms and health. Review of structure and pathogenesis.
A2 ST. Epidemiology: Risk epidemiology. Epidemiological surveillance and prevention.
A3 ST. Environmental health and environmental factors. Air quality and environmental quality.
A4 ST. Mechanisms of pathogenesis and eye infection. Immunological defense mechanisms of the eye.
A5 ST. Biofilms. Bacterial biofilms.
A6 ST. Mechanisms of microbial adhesion and interaction with CL. Inhibition of adhesion.
A7 ST. Diagnostic methods for quantification of microorganisms. Molecular methods.

Related activities:
Act. 1. Initial survey course. Allocation of different projects (research work).
Act. 2. Bibliographic Research Work (keywords and 10 references).
Act. 3. Presentation previous work (maximum 15 slides)
Act. 4. Epidemiological Models / DPSIR Model. Exercises.

Full-or-part-time: 25h
Theory classes: 7h 20m
Laboratory classes: 2h 40m
Self study : 15h

Part B. INTERACTIONS OF MICROORGANISMS WITH CONTACT LENS SOLUTIONS

Description:
B8 ST. Concept of sterilization and disinfection.
B9 ST. Mechanisms of antimicrobial resistance.
B10 ST. Contact lens solutions
B11 ST. Interactions microorganisms-contact lens-solution

Related activities:
Act. 5. Design of survey for CL users

Full-or-part-time: 25h
Theory classes: 7h 20m
Laboratory classes: 2h 40m
Self study : 15h

PART C. RISK PREVENTION, HEALTH AND SAFETY IN CONTACTOLOGY

Description:
ST C12. Microorganisms-contact lenses interaction and risk of infection. Risk factors and health contactology.
ST C13. Comprehensive prevention of microbial risk in contact lens practice
ST C14. Conclusions of Survey

Related activities:
Act. 6. Conclusions of survey for users.
Act. 7. Presentations by each group.

Full-or-part-time: 25h
Theory classes: 7h 20m
Laboratory classes: 2h 40m
Self study : 15h

ACTIVITIES

Act. 1. Initial survey course. Allocation of different projects (research work).

Full-or-part-time: 1h
Laboratory classes: 1h

Act. 2. Bibliographic Research Work (keywords and 10 references).

Full-or-part-time: 1h
Laboratory classes: 1h

Act. 3. Presentation previous work (maximum 15 slides)

Full-or-part-time: 1h
Laboratory classes: 1h

Act. 4. Epidemiological Models / DPSIR Model. Exercises.

Full-or-part-time: 1h
Laboratory classes: 1h

Act. 5. Design of survey for CL users

Full-or-part-time: 1h
Laboratory classes: 1h

Act. 6. Conclusions of survey for users.

Full-or-part-time: 1h
Laboratory classes: 1h

Act. 7. Presentations by each group.

Full-or-part-time: 2h
Laboratory classes: 2h

GRADING SYSTEM

The final grade will be calculated by weighting the work done by each student in each of the tests, as detailed below:
1. Test End. 15%
2. Group work. Presentation = 40%
3. Group work. Attachments = 10%
4. Activities = 20%
5. Individual presentation = 15%

Reevaluation: Written Exam with 100% value

EXAMINATION RULES.

It is necessary to attend a minimum of 90% of practices.
It is necessary to have carried out all the activities posted on ATENEA. Deliveries must follow the instructions given.
UPC regulations in case of detecting copy in the exams.