UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

SYLLABUS DEL CORSO

Lenti a Contatto 1

2627-2-E3006Q008-E3006Q00801

Aims

The aims fall within the area of "Professional training" and refer to the following Dublin Descriptors:

1 – Knowledge and understanding

- Provide knowledge and skills to independently manage the application of soft contact lenses

2 – Applying knowledge and understanding

- Develop the ability to use techniques for fitting and monitoring contact lenses
- Provide scientific and technical knowledge in the field of contact lenses for both clinical use and interpretative application of basic and advanced instrumental technologies

3 – Making judgements

- Develop the ability to reflect independently on the course content

4 – Communication skills

- Acquire communication skills related to the course content

5 – Learning skills

- Develop the ability to reflect independently on the course content in order to acquire learning skills with a view to future developments in the field

Contents

The course introduces the anatomical, physiological, technological, and clinical aspects required for the management of the main types of soft contact lenses. It covers the anatomy and physiology of the anterior segment, the tear film and lens–eye interaction, the characteristics of soft contact lens materials and the main lens designs, as well as the criteria for lens selection, fitting, and clinical management. Particular attention is devoted to the fitting of spherical, toric, and multifocal lenses, the management of deposits and contamination, lens care and maintenance, the main complications, and the interpretation of clinical cases.

Detailed program

1. Anatomy and Physiology of the Anterior Segment
Review of the anatomy of the cornea, sclera, conjunctiva, and limbus, with particular reference to the structural and physiological characteristics relevant to contact lens wear.

2. Instrumental Assessment of the Anterior Segment
Main techniques and instruments used to assess ocular structures and the corneal surface, including slit-lamp examination, corneal topography and tomography, pachymetry, endothelial microscopy, and other principal corneal assessment methods.

3. Tear Film and Corneal Metabolism
Composition, origin, distribution, and drainage of the tear film. Tear film stability and its main metabolic functions in supporting the cornea, with particular emphasis on oxygen exchange and corneal metabolic processes.

4. Assessment of the Tear Film and Lens–Eye Interaction
Main tests for assessing the ocular surface and tear film, including the use of vital dyes and grading scales. Interaction between the contact lens, tear film, and ocular surface.

5. Soft Contact Lenses: History, Design, and Characteristics
Evolution of soft contact lenses and their main design characteristics, including geometry, diameter, base curve, thickness, mass, and material properties. Relationship between lens design, manufacturing processes, and lens behavior on the eye.

6. Soft Contact Lens Materials
Main materials used for soft contact lenses, from hydrogels to silicone hydrogels. Physical and chemical properties, water content, oxygen permeability, ionic and non-ionic characteristics, and material classifications.

7. Contact Lens Properties and Ocular Response
Dehydration, pervaporation, corneal oxygenation, and tear exchange. Mechanical and surface properties of contact lenses, wettability, and interaction with ocular tissues. Main types of deposits and contamination and their clinical relevance.

8. Fitting and Clinical Management of Soft Contact Lenses
Principles of patient selection, lens selection, and fitting assessment. Criteria for evaluating lens fit, centration, movement, and on-eye behavior. Lens dispensing and patient instruction, insertion and removal techniques, replacement schedules, and recommendations for appropriate lens care. Follow-up and assessment of ocular response and lens performance over time.

9. Management of Astigmatic and Presbyopic Patients
Principles of fitting toric soft contact lenses and assessment of stabilization and visual performance. Introduction to the management of presbyopic patients using multifocal contact lenses, including the main criteria for lens selection, fitting, and evaluation. Follow-up and management of fitting-related issues.

10. New Materials and Strategies for Lens Improvement

Evolution of soft contact lens materials, biomimetic materials, and water-gradient technologies. Main strategies aimed at improving comfort, wettability, stability, and lens–ocular surface interaction, including surface treatments and wetting agents.

11. Soft Contact Lens Manufacturing
Main manufacturing techniques used for soft contact lenses and the relationship between manufacturing processes, lens geometry, and final lens characteristics. Introduction to the production of colored and tinted lenses.

12. Contact Lens Care and Maintenance
Principles of lens management according to the replacement modality. Cleaning, disinfection, storage, and proper contact lens case care. Main care systems and products used for hydrogel and silicone hydrogel lenses.

13. Dry Eye and the Ocular Surface in Contact Lens Wearers
Assessment of the ocular surface and the main signs and symptoms of dry eye. Principal diagnostic methods and their implications for the selection and management of contact lens wearers.

14. Complications Associated with Soft Contact Lens Wear
Main complications associated with soft contact lens wear, including signs, symptoms, predisposing factors, recognition, and clinical management.

15. Applications in Specific Situations
Use of contact lenses in sports and introduction to the management of specific ocular and corneal conditions, including keratoconus, post-corneal surgery, and pediatric contact lens applications.

16. Clinical Cases and Fitting Management
Interpretation of clinical cases involving contact lens wearers, identification of fitting-related problems, and development of appropriate management strategies and fitting modifications.

Prerequisites

Knowledge of ocular anatomy and physiology, visual optics, and geometrical optics.

Teaching form

42 hours of in-person lecturers

Textbook and teaching resource

Teaching materials:
Lecturer’s notes and course handouts.

Recommended textbooks:

1. *Clinical Contact Lens Practice*, Bennett, Lippincott Williams & Wilkins.
2. *Contact Lenses*, Phillips, Butterworth-Heinemann.

Semester

first semester

Assessment method

The "Contact Lenses 1" exam consists of two parts: (i) a written exam, and (ii) an oral exam.

The purpose of the written exam is to extensively test preparation on the syllabus.
The purpose of the oral exam is to assess the ability to autonomously reflect on the course topics.

At the end of the semester, a midterm written test (multiple-choice questions, short exercises, and open-ended questions) will be offered on a date announced by the professor via the e-learning platform.
Alternatively, students may take the written exam on the official exam date. The written test on the official exam date will be divided into two parts ("Contact Lenses 1" and "Contact Lenses 2") so that students who have already passed the midterm or a previous attempt need only complete the missing or unpassed section.

Passing the written exam is required to access the oral exam.
The oral exam consists of an interview covering the material taught during the course.

The exam may optionally be taken in **English**. For the written part, students must make an explicit request to the professors at least **one week prior** to the exam date.
Students with an **Individualized University Plan (P.Uo.I.)** must notify the professors at least **two weeks prior** to the exam date.

Office hours

By appointment

Sustainable Development Goals

GOOD HEALTH AND WELL-BEING