

OPT-1610: CONTACT LENS I

Cuyahoga Community College

Viewing: OPT-1610 : Contact Lens I

Board of Trustees:

January 2022

Academic Term:

Fall 2022

Subject Code

OPT - Optical Technology

Course Number:

1610

Title:

Contact Lens I

Catalog Description:

Focuses on history of contact lenses, differences between hard and soft contact lenses, and physical and physiological properties of contact lenses.

Credit Hour(s):

2

Lecture Hour(s):

2

Lab Hour(s):

0

Other Hour(s):

0

Requisites

Prerequisite and Corequisite

Departmental approval: admission to program.

Outcomes

Course Outcome(s):

Identify the fitting parameters of soft contact lenses.

Essential Learning Outcome Mapping:

Not Applicable: No Essential Learning Outcomes mapped. This course does not require application-level assignments that demonstrate mastery in any of the Essential Learning Outcomes.

Objective(s):

1. Describe wearing schedules for soft contact lenses.
2. Identify all contact lens materials.
3. Determine the base curve of a contact lens.
4. Determine the diameter of a contact lens.
5. Discuss how corneal curvature impacts contact lens design.

Course Outcome(s):

Describe how ocular anatomy and physiology impact contact lens fitting.

Essential Learning Outcome Mapping:

Not Applicable: No Essential Learning Outcomes mapped. This course does not require application-level assignments that demonstrate mastery in any of the Essential Learning Outcomes.

Objective(s):

1. Identify ocular structures.
2. Discuss ocular physiology as it pertains to contact lens fitting.
3. Describe tear film dynamics.
4. Identify refractive errors and optical conditions related to contact lenses.
5. Discuss patient measurements including, but not limited to, corneal curvature, horizontal visible iris diameter, tear break up time, lacrimal lake, and the vertical measurement of the palpebral fissure.

Course Outcome(s):

Describe the process of fitting contact lenses.

Essential Learning Outcome Mapping:

Critical/Creative Thinking: Analyze, evaluate, and synthesize information in order to consider problems/ideas and transform them in innovative or imaginative ways.

Objective(s):

1. Describe how to evaluate the fit of soft contact lenses.
2. Describe how to instruct a patient to insert, remove and care for soft lenses.
3. Determine the base curve of a contact lens.
4. Determine the diameter of a contact lens.
5. Describe all aspects of the patient interview and medical history when fitting contact lenses.

Methods of Evaluation:

1. Note taking and class participation in oral discussions
2. Weekly tests and quizzes
3. Final exam

Course Content Outline:

1. History of contact lenses
2. Ocular anatomy
 - a. Tear film
 - i. Lipid
 - ii. Aqueous
 - iii. Mucin
 - iv. Tear dynamics
 - b. Cornea
 - i. Epithelium
 - ii. Bowman's layer
 - iii. Stroma
 - iv. Descemet's membrane
 - v. Endothelium
 - vi. Corneal measurements
 1. Central curve
 2. Diameter
 3. Topography
 - c. Conjunctiva
 - i. Bulbar conjunctiva
 - ii. Palpebral conjunctiva
 - iii. Fornix
 - d. Palpebra
 - i. Accessory glands
 - ii. Cilia
 - iii. Lid margins

- e. Canthi
- f. Limbus
- g. Sclera
- h. Refractive error
- 3. Ocular physiology
 - a. Lacrimal system
 - b. Lid margins
 - c. Corneal topography
 - d. Allergies
- 4. Refractive errors
 - a. Myopia
 - b. Hyperopia
 - c. Astigmatism
 - d. Presbyopia
 - e. Aphakia
 - f. Pseudophakia
- 5. Basic contact lens design
 - a. Materials
 - b. Parameters of rigid lenses
 - i. Material
 - ii. Base curve
 - iii. Diameter
 - iv. Optic zone
 - v. Center thickness
 - vi. Intermediate curve
 - vii. Peripheral curve
 - viii. Edge thickness
 - ix. Sagittal depth
 - x. Water content
 - xi. Oxygen permeability
 - xii. Oxygen transmissibility
 - xiii. Wetting angle
 - c. Parameters of soft contact lenses
 - i. Material
 - ii. Base curve
 - iii. Diameter
 - iv. Water content
 - v. Oxygen permeability
 - vi. Oxygen transmissibility
 - vii. Wetting angle
 - viii. Replacement and wear schedule
- 6. Diagnostic equipment
 - a. Keratometer
 - b. Corneal topographer
 - c. Slit lamp
- 7. Soft contact lens fitting
 - a. Patient interview
 - b. Medical history
 - c. Refractive error
 - d. Assessment of tear layer
 - e. Evaluation of fit
 - f. Patient instruction and aftercare

Resources

American National Standards Institute. *Standards*. New York: The Institute, 2020.

Benjamin, William J., and Irvin M. Borish, eds. *Borish's Clinical Refraction*. 2nd ed. Philadelphia: W. B. Saunders, 2006.

Bennet, Edward S. and Vinita Allee Henry. *Clinical Manual of Contact Lenses*. 4th ed. Philadelphia: Lippincott, Williams, and Wilkins, 2014.

Drake, Diane. *Beginning Your Life as a Contact Lens Technician*. 2nd ed. Landover, MD: National Academy of Opticianry, 2014.

Drake, Diane. *Contact Lens Review Book*. Landover, MD: National Academy of Opticianry, 2020.

Efron, Nathan. *Contact Lens Practice*. 3rd ed. China: Elsevier, 2017.

Stein, Harold, A., Stein, Raymond M., and Melvin I. Freeman. *The Ophthalmic Assistant: A Text for Allied and Associated Ophthalmic Personnel*. 10th ed. Elsevier, 2017.

White, Paul, OD (ed). *Contact Lenses Solutions Summary*. Boston, MA: The New England College of Optometry, 2018. <https://www.clspectrum.com/CLASS>

Resources Other

1. American Optometric Association. <https://www.aoa.org/patients-and-public/caring-for-your-vision/contact-lenses?sso=y> (<https://www.aoa.org/patients-and-public/caring-for-your-vision/contact-lenses/?sso=y>) 2019.
2. Center for Disease Control and Prevention. "Health Contact Lens Wear and Care." <https://www.cdc.gov/contactlenses/index.html> (<https://www.cdc.gov/contactlenses/>) 2019.
3. Contact Lens Spectrum. <https://www.clspectrum.com/> Pentavision, Inc. 2019.
4. Federal Trade Commission. *The Contact Lens Rule: A Guide for Prescribers and Sellers*. <https://www.ftc.gov/tips-advice/business-center/guidance/contact-lens-rule-guide-prescribers-sellers> (<https://www.ftc.gov/tips-advice/business-center/guidance/contact-lens-rule-guide-prescribers-sellers/>)
5. GP Lens Institute, The Educational Resource for Custom Manufactured Contact Lenses. [http://www.gpli.info/online-curriculum/Contact Lens Manufacturers Association](http://www.gpli.info/online-curriculum/Contact-Lens-Manufacturers-Association), 2020.
6. Khan Academy. <https://www.khanacademy.org/> 2019.
7. Quantum Optical. <http://www.quantumoptical.com/> 2019.
8. Review of Optometry. <https://www.reviewofoptometry.com/> Jobson Medical, Inc. 2019
9. Tim Root: Virtual Eye Professor <https://timroot.com/video>
10. U.S Food and Drug Administration. *Contact Lenses*. <https://www.fda.gov/medical-devices/consumer-products/contact-lenses> (<https://www.fda.gov/medical-devices/consumer-products/contact-lenses/>)

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