

# OPT-2620: ADVANCED CONTACT LENS THEORY

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## Cuyahoga Community College

**Viewing: OPT-2620 : Advanced Contact Lens Theory**

**Board of Trustees:**

December 2021

**Academic Term:**

Fall 2022

**Subject Code**

OPT - Optical Technology

**Course Number:**

2620

**Title:**

Advanced Contact Lens Theory

**Catalog Description:**

This course will discuss the principles of the diagnostic fitting of contact lenses. Topics will include lens selection procedures, lens application, the evaluation of fluoresce in patterns, and the evaluation of the contact lens fit.

**Credit Hour(s):**

1

**Lecture Hour(s):**

1

## Requisites

**Prerequisite and Corequisite**

OPT 1621 Contact Lens II.

## Outcomes

**Course Outcome(s):**

Analyze and interpret information about the patient's ocular physiology and contact lens parameters and make appropriate recommendations.

**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.

Quantitative Reasoning: Analyze problems, including real-world scenarios, through the application of mathematical and numerical concepts and skills, including the interpretation of data, tables, charts, or graphs.

**Objective(s):**

1. Evaluate the ocular physiology of the patient.
2. Determine which contact lens will maximize visual acuity and patient comfort while maintaining ocular health.

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**Course Outcome(s):**

Evaluate the fit of diagnostic contact lenses.

**Objective(s):**

1. Evaluate ocular health.
  2. Assess contact lens movement, centration, and stability (axis rotation).
  3. Modify lens parameters to optimize the fit of the contact lens, if necessary.
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**Course Outcome(s):**

Educate patient about proper contact lens wear, care, and handling.

**Objective(s):**

1. Educate patient on proper insertion and removal techniques.
  2. Develop a contact lens hygiene plan for each patient.
  3. Develop and discuss a contact lens wearing schedule with patients.
  4. Instruct patient about complications associated with improper contact lens wear, care, and handling.
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**Course Outcome(s):**

Adhere to federal, state, and local guidelines pertaining to contact lens wear.

**Objective(s):**

1. Verify that contact lenses are within Z80 standards put forth by the American National Standards Institute (ANSI).
  2. Educate patient about Food and Drug Administration (FDA) pertaining to contact lens wear.
  3. Adhere to Federal Trade Commission (FTC) guidelines operating to contact lens dispensing.
  4. Adhere to Centers for Disease Control and Prevention guidelines on healthy contact lens wear.
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**Methods of Evaluation:**

1. Quizzes
2. Exams
3. Interpretation of case studies

**Course Content Outline:**

1. Patient records
  - a. Medical history
  - b. Social history
  - c. Patient history with wearing contact lenses
  - d. Maintaining patient privacy
  - e. Federal, state, and local regulations pertaining to contact lenses
2. Review of ocular anatomy, physiology, and pathology
  - 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
- i. Ocular physiology
  - i. Lacrimal system
  - ii. Lid margins
  - iii. Corneal topography
  - iv. Allergies
- j. Conditions
  - i. Acanthamoeba keratitis
  - ii. Aniridia
  - iii. Albinism
  - iv. Arcus senilis
  - v. Blepharitis
  - vi. Bullous keratopathy
  - vii. Contact lens-induced acute red eye (CLARE)
  - viii. Conjunctivitis
    - 1. Allergic
    - 2. Bacterial
    - 3. Giant Papillary
    - 4. Viral
  - ix. Corneal dystrophies
  - x. Corneal edema
  - xi. Corneal infiltrates and ulcers
  - xii. Corneal scarring
  - xiii. Corneal surgeries
  - xiv. Dry eye
  - xv. Ectropion
  - xvi. Entropion
  - xvii. Exophthalmos
  - xviii. Keratoconus
  - xix. Keratoplasty
  - xx. Keratitis sicca
  - xxi. Microbial keratitis
  - xxii. Neovascularization
  - xxiii. Pinguecula
  - xxiv. Pterygium
  - xxv. Ptosis
- 3. Types of Contact Lenses
  - a. Bandage
  - b. Decorative
  - c. Hard lenses
  - d. Hybrid
  - e. Multifocal
  - f. Rigid Gas Permeable
    - i. Spherical
    - ii. Toric
      - 1. Back-side toric
      - 2. Bitoric
      - 3. Front-side toric
      - 4. Multifocal
  - g. Soft lenses
    - i. Spherical
    - ii. Toric
    - iii. Multifocal
- 4. Pre fitting contact lenses
  - a. Corneal topography
  - b. Keratometer readings (Kreadings)

- c. Tear film evaluation
- d. Slit-lamp evaluation
- 5. Diagnostic fitting
  - a. Lacrimal lens
  - b. Fitting "on K" (K readings)
  - c. Fitting flatter than K (K readings)
  - d. Fitting steeper than K (K readings)
- 6. Evaluations of the contact lens fit
  - a. Ocular health
  - b. Fluorescein patterns
  - c. Lens comfort
  - d. Lens movement
  - e. Lens rotation in toric contact lenses
  - f. Tear film evaluation
  - g. Slit-lamp evaluation
  - h. Visual acuity
- 7. Lens modifications
  - a. Loosen a contact lens that is too tight
  - b. Tighten a contact lens that is too loose
  - c. Adjust contact lens parameters, if necessary
- 8. Patient education
  - a. Appropriate insertion and removal of contact lenses
  - b. Wearing schedule
  - c. Cleaning regimen
  - d. Complications associated with not complying to wearing schedule and cleaning regimen
  - e. Wearing of decorative contact lenses
- 9. Regulatory Agencies
  - a. American National Standards Institute
  - b. Centers for Disease Control and Prevention
  - c. Food and Drug Administration
  - d. Federal Trade Commission

#### 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, 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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