

# OPT-1621: CONTACT LENS II

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## Cuyahoga Community College

**Viewing: OPT-1621 : Contact Lens II**

**Board of Trustees:**

January 2022

**Academic Term:**

Fall 2022

**Subject Code**

OPT - Optical Technology

**Course Number:**

1621

**Title:**

Contact Lens II

**Catalog Description:**

Principles of operation and design of instruments applicable to fitting of rigid gas permeable contact lenses. Optical principles and materials applicable to design processes and relationship to physical condition and structure of the eye in its abnormal state. Discussion of the delivery of both soft and rigid gas permeable contact lenses.

**Credit Hour(s):**

2

**Lecture Hour(s):**

2

## Requisites

**Prerequisite and Corequisite**

OPT-1610 Contact Lens I.

## Outcomes

**Course Outcome(s):**

Identify and evaluate fitting parameters and recommend appropriately designed rigid gas permeable 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. Determine appropriate contact lens power based upon the spectacle prescription of the patient.
2. Design a lens with appropriate curves based upon specific ocular parameters.

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**Course Outcome(s):**

Evaluate the fit of a contact lens based upon ocular parameters set forth in a case study.

**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. Evaluate the subjective fit of a contact lens from information given in case studies.
2. Evaluate the objective fit of a contact lens.
3. Design contact lens modifications to improve the overall fit of the lens.

**Course Outcome(s):**

Identify and discuss all aspects of the delivery of contact lenses.

**Objective(s):**

1. Design contact lens modifications to improve the overall fit of the lens.
  2. Apply American National Standards Institute Z80 tolerances in theoretical scenarios.
  3. Discuss all aspects of contact lens care including insertion and removal of the contact lens, wearing schedule, adaptive and abnormal symptoms, care systems and accessory solutions.
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**Methods of Evaluation:**

1. Note-taking and class participation in class discussions
2. Quizzes
3. Exams

**Course Content Outline:**

1. Evaluation of ocular anatomy and physiology
  - a. Keratometry
    - i. Focusing the eyepiece
    - ii. Evaluating corneal curvature
      1. Spherical corneal surface
      2. Astigmatism
        - a. With-the-rule astigmatism
        - b. Against-the-rule astigmatism
        - c. Oblique astigmatism
        - d. Irregular astigmatism
  - b. Biomicroscopy
    - i. Basic design
    - ii. Illumination
      1. Diffuse illumination
      2. Direct illumination
        - a. Parallelepiped
        - b. Optic section
        - c. Specular reflection
        - d. Conical beam
      3. Indirect illumination
      4. Retro-illumination
      5. Sclerotic scatter illumination
    - iii. Evaluation of fluorescein patterns
      1. Steep pattern
      2. Flat pattern
      3. With-the-rule astigmatism
      4. Against-the-rule astigmatism
      5. Staining patterns
        - a. Stippling
        - b. Punctate
        - c. Abrasion
        - d. 3 and 9 o'clock staining
        - e. Arcuate
        - f. Foreign body
        - g. Dimple veil
2. Indications and contraindications of contact lens wear
  - a. Indications for contact lens wear
    - i. Refractive indications
    - ii. Ocular conditions necessary for contact lens wear
      1. Tear film requirements
      2. Corneal topography

- a. With-the-rule astigmatism
      - b. Against-the-rule astigmatism
      - c. Oblique astigmatism
      - d. Irregular astigmatism
    3. Healthy conjunctiva
    4. Healthy lids and lashes
    5. Evaluation of patient compliance with previous contact lenses
  - b. Possible contraindications for contact lens wear
    - i. Respiratory disorders
    - ii. Diabetes
    - iii. Endocrine changes
    - iv. Thyroid disease
    - v. Rheumatoid arthritis
3. Fitting of rigid daily wear contact lenses
- a. Patient selection
  - b. Optics of rigid lenses
    - i. Spectacle prescription
    - ii. Determination of base curve
    - iii. Vertex compensation
    - iv. Tear film compensation
      1. Steep add minus
      2. Flat add plus
    - v. Residual astigmatism
    - vi. Final determination of contact lens prescription
4. Contact lens verification and modification
- a. Lens power
  - b. Lens curves
  - c. Lens diameter
  - d. Optical zone diameter and peripheral curves
  - e. Blends
  - f. Center and edge thickness
  - g. Lens fit
  - h. Final inspection of rigid contact lenses
    - i. In-office modifications
5. Contact lens delivery procedures
- a. Patient instruction
    - i. Insertion and removal of contact lenses
      1. Rigid gas permeable contact lenses
      2. Soft contact lenses
    - ii. Repositioning of contact lenses
      1. Rigid gas permeable contact lenses
      2. Soft contact lenses
    - iii. Wearing schedule
      1. Rigid gas permeable contact lenses
      2. Soft contact lenses
    - iv. Care systems
      1. Rigid gas permeable contact lens system
      2. Soft contact lens systems
        1. Multipurpose solutions
        2. Disinfecting systems
          - a. Traditional disinfection
            - i. Cleaning solution
            - ii. Storage in saline
            - iii. Enzymatic disinfection
          - b. Hydrogen peroxide disinfection
    - v. Accessory solutions
      1. Saline
      2. Rewetting drops

- vi. Adaptive symptoms
- vii. Abnormal symptoms
- b. Patient compliance
- c. American National Standards Institute
- 6. Patient follow up
  - a. Subjective
  - b. Objective
    - i. Assessment of visual acuity
    - ii. Over-refraction
    - iii. Biomicroscopy while wearing the lens
    - iv. Biomicroscopy without lens
    - v. Follow up keratometry
    - vi. Evaluation of patient compliance
  - c. Assessment
  - d. Plan
- 7. Fitting, dispensing, and follow up for specialty lenses
  - a. Extended Wear
  - b. Multifocal
    - i. Segmented contact lens
    - ii. Concentric contact lens
  - c. Saturn lens

## Resources

Bennett Edward S. and Vinita Allee Henry. *Clinical Manual of Contact Lenses*. 5th. Philadelphia: Lippincott Williams and Wilkins, 2019.

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Contact Lens Society of America. *Contact Lens Manual Vol I*. 1st. St Paul: Contact Lens Society of America, 2016.

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

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

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

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

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## 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/>)

Key: 3331