

OPH 261 CONTACT LENS I

COURSE DESCRIPTION:

Prerequisites: OPH 121 and OPH 142

Corequisites: None

This course introduces rigid contact lens fitting. Emphasis is on clinical applications, patient selection, design parameters, instrumentation, and corneal physiology. Upon completion, students should be able to describe basic patient evaluation and fitting procedures for rigid and soft lenses, recognize problems, and determine effective and appropriate solutions. Course Hours Per Week: Class, 3. Lab, 3. Semester Hours Credit, 4.

COURSE OBJECTIVES:

Upon completion of the course, the student will be able to:

- a. Cite the major landmarks in contact lens development.
- b. Describe current rigid contact lens materials and manufacturing techniques.
- c. Describe the optics associated with rigid contact lenses.
- d. Interpret rigid contact lens prescriptions.
- e. Record patient history.
- f. Use contact lens fitting instruments.
- g. Verify the base curve of a rigid contact lens.
- h. Measure the base curve of the corneal surface.
- i. Fit contact lenses using the universal fitting method.
- j. Relate patient symptoms to rigid contact lens adjustment.
- k. Adjust and modify rigid contact lenses.
- l. Describe the optics associated with soft contact lenses.

OUTLINE OF INSTRUCTION:

- I. Ocular anatomy
 - A. Cornea
 - B. Lids
 - C. Adnexa
- II. Rigid and soft contact lens history
 - A. First applied lenses
 - 1.) Period of 18th century
 - 2.) Period of 19th century
 - B. Contact lenses in America
 - 1.) Glass lenses
 - 2.) Plastic lenses
 - C. Modern developments
 - 1.) Single vision
 - 2.) Multifocal
 - D. The future of contact lenses
- III. Optics of contact lenses
 - A. Refraction in contact lenses
 - B. Prism in contact lenses

- C. Determination of lens power
 - 1.) Front vertex
 - 2.) Back vertex
- IV. Rigid and soft contact lens designs and parameters
 - A. Rigid contact lens designs
 - 1.) Single-vision
 - 2.) Multifocal
 - 3.) Lenticular
 - B. Single-curve contact lenses
 - C. Multi-curve contact lenses
 - D. Prism-ballast contact lenses
 - E. Truncated contact lenses
 - F. Junctions
 - G. Measurements
- V. Rigid and soft contact lens terms and symbols
 - A. Abbreviations
 - B. Dioptic increments
 - C. Keratometric terms
- VI. Rigid and soft contact lens formula and computations
 - A. Radius of curvature formula
 - B. Nominal power formula
 - C. Vertex distance calculations
 - D. Sag formula
 - E. Determination of toric curvature
 - F. The tear lens
 - G. Front vertex power
 - H. Back vertex power
- VII. Rigid and soft contact lens materials and manufacture
 - A. Basic chemistry
 - B. PMMA material
 - C. Gas-permeable materials
 - D. Manufacturing process
- VIII. Rigid and soft contact lens instrumentation
 - A. Ophthalmometry – basic optics and procedures
 - B. Keratometer – basic optics and procedures
 - C. Slit lamp
 - D. Radiuscope
 - E. Measuring ruler
 - F. Measuring magnifier
 - G. Lensometer
 - H. Diameter gauge
 - I. Thickness meter
 - J. Evaluative testing - Fluorescence patterns and Schirmer's test
- IX. Evaluating patients as candidates for rigid contact lenses
 - A. Patient selection – motivation, physical requirements
 - B. Good candidates for contact lenses

- C. Poor candidates for contact lenses
- X. Interpreting rigid and soft contact lens prescriptions
 - A. Ophthalmic abbreviations
 - B. Prescription formats
 - 1.) Spherical prescriptions
 - 2.) Cylindrical prescriptions
 - 3.) Prismatic prescriptions
 - 4.) Multifocal prescriptions
 - C. Astigmatism
 - 1.) With-the-rule
 - 2.) Against-the-rule
 - 3.) Oblique
- XI. Fitting methods for rigid and soft contact lenses
 - A. Patient's chart
 - B. Anterior parameters
 - C. Universal fitting method
 - 1.) Spherical lenses
 - 2.) Toric lenses
 - 3.) Corneal astigmatism
 - D. Trial lens method
 - E. Special methods
 - F. Vertex power recomputations
 - G. The tear lens principle
- XII. Determining the initial lens
 - A. Case history
 - B. Fitting guides of major manufacturers
 - C. K readings
 - D. Ocular dimensions
 - E. Prescription interpretations
 - F. Indicators of well-fitting contact lenses
 - G. Indicators of poor-fitting contact lenses
- XIII. Evaluating the initial lens
 - A. Visual acuity
 - B. Corneal changes
 - C. Staining patterns
 - D. Injections
 - E. Diseases and infections
 - F. Instruments
 - G. Diagnostic tests
 - H. Patient reactions
- XIV. Adjusting and modifying rigid contact lenses
 - A. Signs and symptoms
 - 1.) Common
 - 2.) Adaptive
 - B. The modifying unit
 - C. Modification processes
 - 1.) Polishing
 - 2.) Blending

- 3.) Power changes
- 4.) Edge restoration
- 5.) Diameter reduction

- XV. Inserting and removing rigid and soft contact lenses
 - A. Hygiene
 - B. Instruction tips
 - C. Alternate methods
 - D. Suction-cup removal
- XVI. Arranging follow-up and referrals
 - A. Diagnostic testing
 - B. Signs and symptoms
- XVII. Rigid and Soft contact lens designs and parameters
 - A. Single-vision designs
 - B. Multifocal designs
 - C. Lenticular designs
 - D. Toric designs
 - E. Junctions
 - F. Measurements
- XVIII. Soft contact lens history
 - A. Major innovations
 - B. The future of soft contact lenses

REQUIRED TEXTBOOK AND MATERIALS:

Contact Lens Society of America Manual – A comprehensive Study and Reference Guide, Volume #1.

SUGGESTED REFERENCES:

Bennett and Grohe. Rigid Gas-Permeable Contact Lenses.
 Bier. Contact Lens Correction.
 Hales. Contact Lenses - A Clinical Approach To Fitting.
 Jenkin and Tyler-Jones. Theory and Practice of Contact Lens Fitting.
 Rosenwasser. Malpractice and Contact Lenses.
 Lowther. Contact Lenses: Procedures and Techniques.
 Filderman and White. Contact Lens Practice and Patient Management.
 Stein, Slatt, and Stein. Fitting Guide for Rigid and Soft Contact Lenses, 3rd ed. C.V. Mosby Co., 1990.

STATEMENT FOR STUDENTS WITH DISABILITIES:

Students who require academic accommodations due to any physical, psychological, or learning disability are encouraged to request assistance from a disability services counselor within the first two weeks of class. Likewise, students who potentially require emergency medical attention due to any chronic health condition are encouraged to disclose this information to a disability services counselor within the first two weeks of class. Counselors can be contacted by calling 919-536-7207, ext. 1413 or by visiting the Student Development Office in the Phil Wynn Jr. Student Services Center, room 1209.