OPH 260

BASIC CONTACT LENS CONCEPTS

COURSE DESCRIPTION:

Prerequisites: OPH 121 and OPH 141
Corequisites: None

This course introduces the theory of contact lens fitting. Emphasis is on rigid and soft contact design and fitting concepts. Upon completion, students should be able to describe basic contact lens fitting concepts. Class Hours Per Week: Class, 3. Semester hours Credit, 3.

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 and soft contact lens materials and manufacturing techniques.
c. describe the optics associated with rigid and soft contact lenses.
d. interpret rigid and soft contact lens prescriptions.
e. record patient history.
f. describe use of contact lens fitting and verification instruments.
g. describe fitting contact lenses using the universal method.
h. relate patient symptoms to rigid and soft contact lens adjustment.
i. describe modifying rigid contact lenses.
j. select lens material/brands/products.
k. instruct patient in soft and rigid lens care and wearing schedules.
l. describe the principles behind extended-wear lenses.
m. asses patients as candidates for each type of contact lens.
n. discuss multifocal contact lenses.
o. discuss aphakic and minus Lenticular contact lenses.
p. conform to federal and state regulations regarding contact lenses.
q. troubleshoot.
r. use FDA guidelines to assess the safety of prolonged lens wear.

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
- 1. Refraction in contact lenses
- 2. Prism in contact lenses
- 3. Determination of lens power
  - a. Front vertex
  - b. 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. Dioptric increments
- C. Keratometric terms

VI. Rigid and soft contact lens formulas 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. Ophthalmometer – basic optics and procedure
- B. Keratomer – 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: Fluorescene patterms and Schirmer's test

IX. Evaluating patients as candidates for rigid and soft 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. Obique

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 process
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
C. Referring to the prescriber

REQUIRED TEXT:

Contact Lens Society of America. Contact Lens Manual – A Comprehensive Study & Reference Guide

SUGGESTED REFERENCE:

Stein, Slatt, and Stein. Fitting Guide for Rigid and Soft Contact Lenses, 3rd ed. C.V. Mosby, 1990.

STATEMENT OF 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 Phail Wynn Jr. Student Services Center, room 1209.