

# BROWARD COLLEGE COURSE OUTLINE

**LAST REVIEW: 2011-2012**

**NEXT REVIEW: 2015-2016**

**STATUS: A**

**COURSE TITLE: CONTACT LENS THEORY**

**COMMON COURSE NUMBER: OPT 2500**

**CREDIT HOURS: 2**

**CONTACT HOUR BREAKDOWN 4**

Lecture: **32**      Lab:

Clinic:              Other:

**PREREQUISITE(S): OPT 1150**

**COREQUISITE(S): OPT 1450**

**PRE or COREQUISITE(S): OPT 2500L**

## **COURSE DESCRIPTION:**

This course provides a review of the theory and terminology of contact lenses including fitting, application and removal procedures, care of soft and hard lenses, verification of contact lens prescription and "in-office" modification of contact lenses.

## **UNIT TITLES**

1. HISTORICAL DEVELOPMENT OF CONTACT LENSES
2. CONTACT LENS TERMINOLOGY AND TYPES
3. OPTICAL PRINCIPLES OF CONTACT LENSES
4. ANATOMY AND PHYSIOLOGY AS RELATED TO CONTACT LENS WEAR
5. PRELIMINARY EXAMINATION AND CONSULTATION
6. CONTACT LENS FITTING PROCEDURES
7. INSPECTION AND VERIFICATION
8. MODIFICATION OF CONTACT LENSES
9. SOLUTIONS AND ACCESSORIES
10. PATIENT EDUCATION
11. FOLLOW-UP EXAMINATION
12. SPECIAL CASES
13. OFFICE PROCEDURES

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### UNIT 1: HISTORICAL DEVELOPMENT OF CONTACT LENSES

#### **General Outcome:**

- 1.0 The student will be able to trace the development of contact lenses and relate the early theories to modern lenses.

#### **Specific Measurable Learning Outcomes:**

##### **Upon successful completion of this unit, the student shall be able to:**

- 1.1 List the historical development of contact lenses.
- 1.2 Discuss the use of plastic scleral lens.
- 1.3 Compare modern corneal lenses to scleral lenses.
- 1.4 Trace the development of hydrogel contact lenses.
- 1.5 Explain the usage of newer rigid gas permeable lenses.
- 1.6 Discuss soft silicone contact lenses.

### UNIT 2: CONTACT LENS TERMINOLOGY AND TYPES

#### **General Outcome:**

- 2.0 The student will be able to communicate with contact lens practitioners, laboratories, and patients with an understanding of contact lens terminology.

#### **Specific Measurable Learning Outcomes:**

##### **Upon successful completion of this unit, the student shall be able to:**

- 2.1 Discuss refractive errors and how to correct them.
- 2.2 Define common contact lens terms and abbreviations for corneal lenses.
- 2.3 Discuss posterior central curves.
- 2.4 Describe contact lens anterior surfaces.
- 2.5 Relate thickness to comfort and power.
- 2.6 Discuss special lens designs.
- 2.7 Compare various bifocal contact lens designs.
- 2.8 Define common contact lens terms and abbreviations for hydrogel contact lenses.
- 2.9 Compare and contrast different contact lens materials.

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#### **UNIT 3: OPTICAL PRINCIPLES OF CONTACT LENSES**

##### **General Outcome:**

3.0 The student will be able to discuss the optical principles involved in the fitting of contact lenses.

##### **Specific Measurable Learning Outcomes:**

**Upon successful completion of this unit, the student shall be able to:**

- 3.1 Discuss the optics of the eye.
- 3.2 Explain how the tear layer changes the refractive power of rigid contact lenses.
- 3.3 Determine the optical properties of spherical rigid lens on a toric cornea.
- 3.4 Explain residual astigmatism and how to correct for it.
- 3.5 Compare the optics of hard contact lenses to soft contact lenses.
- 3.6 Discuss the application of vertex distance to contact lens fitting.
- 3.7 Solve problems involved in astigmatism and vertex distance.

#### **UNIT 4: ANATOMY AND PHYSIOLOGY AS RELATED TO CONTACT LENS WEAR**

##### **General Outcome:**

4.0 The student will demonstrate a basic knowledge of the eye and its surrounding structures. The ability to communicate with patients and professionals will be emphasized.

##### **Specific Measurable Learning Outcomes:**

**Upon successful completion of this unit, the student shall be able to:**

- 4.1 Explain how the eyelids are important in the fitting of contact lenses.
- 4.2 Discuss the layers of the tear film and their interaction with contact lenses.
- 4.3 Describe the cornea and corneal oxygenation.
- 4.4 Discuss the limbus and limbal contact lenses.
- 4.5 Describe the conjunctiva.
- 4.6 List and explain the ocular structures behind the cornea.

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### UNIT 5: PRELIMINARY EXAMINATION AND CONSULTATION

#### **General Outcome:**

- 5.0 The student will be able to discuss the importance of the pre-fitting exam and the recording of information. Determination of a good candidate, baseline visual status, and record keeping will be discussed.

#### **Specific Measurable Learning Outcomes:**

##### **Upon successful completion of this unit, the student shall be able to:**

- 5.1 Explain the importance of the case history.
- 5.2 List the Sections of a proper case history.
- 5.3 Describe the procedures for taking a visual acuity.
- 5.4 Describe the procedures for using a Keratometer.
- 5.5 Explain how the information generated by the Keratometer can be useful in fitting a contact lens.
- 5.6 Compare six (6) types of targets found on common Keratometers.
- 5.7 Describe the procedure for extending the range of the Keratometer.
- 5.8 Explain the use of peripheral Keratometry.
- 5.9 Describe the use of a Photokeratocscope.
- 5.10 Explain the procedure used in taking a “K” reading with an automated Keratometer.
- 5.11 List the steps in performing an external contact lens examination.
- 5.12 Describe the Slit-Lamp Biomicroscope.
- 5.13 Explain the use of the Slit-Lamp Biomicroscope in an examination for contact lenses.
- 5.14 Discuss the use of stains to examine the eye.
- 5.15 Discuss lid eversion.
- 5.16 Compare two (2) methods of determining the quality of the tear film.
- 5.17 Explain the various ocular dimensions and how to measure them.
- 5.18 Describe the use of ocular photography in the fitting of contact lenses.
- 5.19 Discuss the indications and contraindications to contact lens wear.

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### UNIT 6: CONTACT LENS FITTING PROCEDURES

#### **General Outcome:**

- 6.0 The student will be able to describe the procedure for fitting contact lenses using the trial lens method based on specific fitting criteria.

#### **Specific Measurable Learning Outcomes:**

##### **Upon successful completion of this unit, the student shall be able to:**

- 6.1 List the three (3) criteria basic to contact lens fitting.
- 6.2 Describe rigid lens placement and removal.
- 6.3 List the steps in rigid lens placement and removal.
- 6.4 Discuss fluorescein pattern evaluation.
- 6.5 Describe the interaction of base and peripheral curves on rigid contact lenses.
- 6.6 List the fitting characteristics of rigid contact lenses.
- 6.7 Explain the procedure for fitting hydrogel contact lenses.
- 6.8 Compare overall diameter to fitting characteristics.
- 6.9 Compare and contrast the differences between rigid and hydrogel contact lens fitting.

### UNIT 7: INSPECTION AND VERIFICATION

#### **General Outcome:**

- 7.0 The student will be able to describe the procedures used to determine if the specific parameters ordered have been followed by the laboratory.

#### **Specific Measurable Learning Outcomes:**

##### **Upon successful completion of this unit, the student shall be able to:**

- 7.1 List the parameters that need to be verified on a rigid contact lens.
- 7.2 Describe the instruments and tools used to inspect and verify rigid contact lenses.
- 7.3 Discuss the acceptable tolerances according to ANSI standards and patient acceptance.
- 7.4 Explain the procedure for verification of a contact lens's base curve.
- 7.5 Describe the use of the Optical Microspherometer (Radiuscope).

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#### UNIT 7: INSPECTION AND VERIFICATION continued

- 7.6 Differentiate between the use of the Radiuscope and the Keratometer to determine the base curve of contact lenses.
- 7.7 Describe the method used to determine the power of contact lenses.
- 7.8 Explain how the optical quality of contact lenses can be verified.
- 7.9 Compare several methods for determining the center thickness of rigid contact lenses.
- 7.10 Describe the use of the projection magnifier to verify the edges of rigid contact lenses.
- 7.11 List the parameters that need to be verified on a hydrogel contact lens.
- 7.12 Describe the instruments and tools used to inspect and verify hydrogel contact lenses.
- 7.13 Describe the template bar method to determine the radius of hydrogel contact lenses.
- 7.14 Describe the use of a wet cell to determine the power of hydrogel contact lenses.
- 7.15 List the reasons for rejecting a contact lens from the laboratory.

#### UNIT 8: MODIFICATION OF CONTACT LENSES

##### **General Outcome:**

- 8.0 The student will be able to discuss in-office modifications to rigid contact lenses .

##### **Specific Measurable Learning Outcomes:**

##### **Upon successful completion of this unit, the student shall be able to:**

- 8.1 Describe the modification unit.
- 8.2 Compare several polishes.
- 8.3 Describe peripheral curve fabrication and modification.
- 8.4 Explain the use of grinding radius laps.
- 8.5 Explain the use of polishing laps.
- 8.6 Describe how to blend a rigid lens.
- 8.7 Discuss in-office modification of the edge of a rigid lens.
- 8.8 Discuss the method for in-office power modification.
- 8.9 Compare several methods of polishing a lens.

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### UNIT 9: SOLUTIONS AND ACCESSORIES

#### **General Outcome:**

9.0 The student will demonstrate an in-depth knowledge of contact lens cleaning and conditioning solutions and other accessories.

#### **Specific Measurable Learning Outcomes:**

**Upon successful completion of this unit, the student shall be able to:**

- 9.1 Discuss general principles of contact lens pharmacology.
- 9.2 Explain the use of solutions for PMMA and other rigid contact lenses.
- 9.3 List the types of solutions for PMMA and other rigid contact lenses.
- 9.4 Discuss solutions and sterilization for hydrogel lenses.
- 9.5 Compare and contrast the three (3) types of sterilization procedures for hydrogel contact lenses.
- 9.6 Explain the use of artificial tears.

### UNIT 10: PATIENT EDUCATION

#### **General Outcome:**

10.0 The student will be able to communicate to a patient the proper placement, removal and care of contact lenses as well as educating the patient to signs, symptoms, and proper follow-up care.

#### **Specific Measurable Learning Outcomes:**

**Upon successful completion of this unit, the student shall be able to:**

- 10.1 Describe the general principles of educational aids in contact lens education.
- 10.2 Explain emergency procedures to a new contact lens wearer.
- 10.3 Explain the techniques of lens wear for rigid contact lenses.
- 10.4 Describe the use of cosmetics and proper hygiene with contact lenses.
- 10.5 Describe normal adaptation sensations.
- 10.6 Explain proper wearing schedules.
- 10.7 Explain the techniques of lens wear for hydrogel contact lenses.

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10.8 Discuss proper lens handling by the patient.

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### UNIT 11: FOLLOW-UP EXAMINATION

#### **General Outcome:**

11.0 The student will be able to discuss how the many factors involved in contact lens wear may affect the patient's ocular health. The procedure for the follow-up examination will also be discussed.

#### **Specific Measurable Learning Outcomes:**

##### **Upon successful completion of this unit, the student shall be able to:**

- 11.1 List the follow-up examination procedures.
- 11.2 Discuss the history and symptoms.
- 11.3 List patient symptoms and signs with both rigid and hydrogel contact lenses.
- 11.4 Describe the process of over-refraction.
- 11.5 Discuss the evaluation of lens fit.
- 11.6 Describe various fluorescein patterns.

### UNIT 12: SPECIAL CASES

#### **General Outcome:**

12.0 The student will be able to discuss the needs of special patients and how to fit them with contact lenses.

#### **Specific Measurable Learning Outcomes:**

##### **Upon successful completion of this unit, the student shall be able to:**

- 12.1 Explain the use of extended wear lenses.
- 12.2 Discuss high myopia and contact lenses.
- 12.3 Compare visual acuity of a patient with high amounts of astigmatism with contact lenses and with glasses.
- 12.4 Explain the use of contact lenses with the aphakic patient.
- 12.5 Discuss keratoconus and contact lenses.
- 12.6 Describe several methods to achieve useable vision at all ages with the presbyopic contact lens wearer.
- 12.7 Explain orthokeratology.

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12.8 Describe the use of haptic lenses.

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### UNIT 13: OFFICE PROCEDURES

#### **General Outcome:**

- 13.0 The student will be able to describe common office procedures associated with normal contact lens practice.

#### **Specific Measurable Learning Outcomes:**

#### **Upon successful completion of this unit, the student shall be able to:**

- 13.1 Explain proper scheduling techniques.
- 13.2 Describe patient handling.
- 13.3 Discuss fees and 3rd party payments.
- 13.4 Explain the use of warranties, service contracts, and insurance.
- 13.5 Describe recall systems.
- 13.6 Discuss various methods of inventory maintenance.
- 13.7 Explain basic equipment maintenance.