

Course Outline

Pure Optics Jeopardy Reimagined

Course Author and Speaker

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Course Description

Ophthalmic Optics Spectacles and Contact Lenses questions and answers; What is Pure Optics Jeopardy Reimagined? Opta-peeps, test your optical knowledge run this fun and interactive method to learning topics in multiple categories including anatomy and physiology, ophthalmic lenses, contact lenses, dispensing, Rx analysis, ANSI standards, lab and optical history. Follow along on your own optical score card as several lucky participants will be selected to compete in optical jeopardy.

Learning Objectives

Upon completion of this course the students should be able to:

1. describe major adnexa and intra-ocular anatomy and physiology
2. identify the following; formulae Prentice Rule, focal length, prism power, effective vertex, ANSI and basic RX analysis
3. identify and describe fundamentals of basic contact lens essentials (base curve, DK/t value, HVID, lens modalities, material and terminology)

Course Outline (60 minutes total time)

I. Category: Anatomy & Physiology (10 minutes)

- A. Extra ocular muscles
- B. Tear film layers
- C. Cornea layers
- D. Limbus
- E. Cornea dioptric power
- F. Crystal lens purpose and power
- G. Retina layers
- H. Macula
- I. Rods and Cones
- J. Optic nerve
- K. Occipital lobe

II. Category: Ophthalmic Lenses and Formulae (12 min)

- A. Formulae
 - 1. Thin lens formula
 - 2. Focal length formula
 - 3. Vertex effective power formula
 - 4. Prentice Rule
 - 5. Minimum Blank Size (MBS) formula
 - 6. Full Decentration formula
- B. Ophthalmic lens surface
 - 1. Base curve
 - 2. Ocular curve
- C. Refractive index
 - 1. CR-39

- 2. Polycarbonate
 - 3. Trivex
- D. Abbe value definition
- E. Abbe value
 - 1. CR-39
 - 2. Polycarbonate
- F. Plus lens design
- G. Minus lens design
- H. Photochromic lens definition
- I. Progressive Lenses
- J. Fresnel Press-on Prism
- K. Slab-off / bi-centric grinding

III. **ANSI Z80.1-2020** (5 min)

- A. Tolerance Prism
 - 1. Prism @ 180th meridian
 - 2. Prism @ 090th meridian
- B. Tolerance Base Curve
- C. Tolerance Axis
 - 1. Cyl. Pwr. - 0.50 D
 - 2. Cyl. Pwr. -1.00 D

IV. **Dispensing and Rx Analysis** (8 min)

- A. Astigmatic Line Focus Points
 - 1. Mixed astigmatism
 - 2. Compound Myopic

B. Tools

1. Truing or axis plier
2. Fiber jaw plier

C. Adjustments for frame misalignment vertical

3. Right too low
4. Left too low
5. Variant planes (right side too close)

V. **Optical History** (5 min)

- A. Kevin Kevin Tuohy
- B. Soper Kone
- C. Charles F. Prentice
- D. W. Snell
- E. Martin
- F. Friz Zernike
- G. Von Seidel
- H. Carl Zeiss

VI. **Contact Lenses** (15 min)

- A. Silicone hydrogel
- B. DK/t value
- C. Horizontal Visible Diameter (HVID)
- D. Keratoconus
- E. Dry Eye
 - A. TBUT
- F. K measurements
 - A. With the Rule
 - B. Against the Rule
 - C. Oblique Astigmatism
- G. Biomicroscope (Slit-Lamp)
- H. Modalities
 - A. Daily Wear
 - B. Extended Wear
 - C. 2 week planed replacement

- I. Florescene patterns
 - A. 090th
 - B. 180th

VII. **Lab** (5 min)

- A. Generator
- B. Edger
- C. Cylinder machine
- D. Crucible
- E. Vacuum chamber
- F. Lensometer