

The Color of Vision: How We See the World

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1 hour

Course Description:

This engaging lecture explores the fascinating science of color perception, color blindness, and how the brain interprets the electromagnetic spectrum. Participants will learn how differences in color vision affect lens tints, coatings, and patient preferences in eyewear. The course blends scientific concepts with practical applications for optical professionals, helping them better communicate with patients and tailor lens recommendations to individual needs.

Learning objectives:

- Understand the basics of how we perceive color
 - Learn how color blindness affects vision and patient needs
 - Understand the role of lens tints and coatings in vision care
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15 minutes | The Science of Color Perception

- Light as an electromagnetic wave: the **visible spectrum**
 - How the **eye detects color**:
 - Rods and cones
 - The role of photopigments
 - Why we see different colors:
 - Wavelengths (red, green, blue)
 - The brain's interpretation of signals
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10 minutes | Understanding Color Vision Deficiencies

- Types of **color blindness**:

- Protanopia, Deuteranopia, Tritanopia
 - Total color blindness (achromatopsia)
 - How color blindness affects daily life
 - Optical tools and lens solutions for color blindness (e.g., **EnChroma lenses**)
 - *Key takeaway:* How opticians can help patients with color vision concerns
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10 minutes | How Lens Tints & Coatings Influence Color Perception

- The purpose of lens tints:
 - Cosmetic vs. functional
 - Common tint colors and their effects
 - AR coatings and color perception (e.g., blue-violet reflections)
 - Photochromic lenses and color adaptation
 - *Pro tip:* How to guide patients in **choosing the right tint** for their needs
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10 minutes | Patient Preferences: The Psychology of Color

- Emotional associations with color (e.g., blue = calm, red = energetic)
 - How personal color preferences influence **frame and lens choices**
 - Gender and cultural factors in color preferences
 - Talking to patients about **lens color** without getting too technical
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10 minutes | Real-World Scenarios & Common Challenges

- Case 1: A patient hates the color cast from their new AR lenses—what now?
 - Case 2: A patient with color blindness struggles to distinguish traffic signals
 - Case 3: A patient wants a “cool blue tint” but complains of poor visibility at night
 - Discussion: How to navigate these challenges with knowledge and empathy
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5 minutes | Wrap-Up & Q&A

- Recap key points:
 - Science of color perception
 - Impact of color blindness
 - Lens tints and coatings in practice