



**Fabrice Manns, Ph.D.**

Department of Biomedical Engineering, Professor and  
Chair, Department of Ophthalmology, Professor,  
University of Miami

**Date** Friday, April 18, 2025

**Time** 12:00 to 1:00 PM

**Location** S 105

**Title:** *Engineering the optics of the eye*

**Abstract:** The function of the optical system of the eye is to create a sharp image of the outside world on the retina. The image formed on the retina changes with age as the eye continuously grows throughout the entire lifespan from the time we are born all the way to old age. For instance, myopia develops during childhood when the growth of the eye produces a mismatch between the focus and the length of the eye. As we age, we also progressively lose our ability to focus on near objects because the lens of the eye becomes stiffer, leading to a condition known as presbyopia starting at around age 45 to 50 years. Finally, the lens of the eye progressively loses its transparency with age, resulting in a condition known as cataract later in life. In this lecture, we will review the basic optics of the eye and give examples of how biomedical engineers have contributed to the field of vision correction through the development of technologies to measure, image and correct vision.

**Bio:** Fabrice Manns is a professor of biomedical engineering and ophthalmology and the chair of the Department of Biomedical Engineering at the University of Miami. His current research focuses on the development of optical imaging and biometry systems to study how the optical system of the eye evolves with age. The end goal of these studies is to optimize vision-correction procedures with a focus on presbyopia and myopia. Dr. Manns received an electrical engineering degree from the Ecole Nationale Supérieure d'Electronique et de Radioélectricité de Bordeaux (ENSEIRB) and a post-graduate degree from the University of Bordeaux in microelectronics. He earned his PhD in biomedical engineering from the University of Miami and completed a post-doctoral fellowship at Bascom Palmer Eye Institute before joining the University of Miami faculty with a joint appointment in the Department of Biomedical Engineering and the Department of Ophthalmology.