



College of Optics & Photonics

Spring 2021

OSE-5203 Geometrical Optics

Time: Tuesday and Thursday 1:30 PM – 2:45 PM
January 12, 2021 – May 4, 2021

Location: CREOL-102/103

Credit Hours: 3 hours

Prerequisite: Graduate standing or consent of instructor

Catalog Description: Fundamentals of Geometrical Optics, Geometrical Theory of Image Formation and Aberrations

Course Description:

Optical rays. Fermat's principle. Reflection and refraction from planar and curved surfaces. Imagery by a single surface and multiples surfaces. Gaussian and Newtonian imaging equations. Magnification. Cardinal points. Stops and pupils. Vignetting. Field of view. Numerical aperture. Radiometry and Photometry. Chromatic dispersion and chromatics aberrations. Monochromatic aberrations. Seidel Third Order Primary and the Seidel Sums. Elementary optical systems; the eye, microscopes, telescopes, projectors.

Learning Outcomes:

- The students should understand the basic principles of modern geometrical optics.
- The students should also be able to solve analysis and design problems for basic optical systems.
- The students should be able to perform an exact ray tracing and evaluate the system aberrations.

Instructor: Dr. Jim Moharam, Professor

- **Office:** CREOL-209
- **Email:** moharam@creol.ucf.edu

Delivery Modality:

- Course materials (syllabus, notes, problem sets, solutions, and old exams) will be available on Webcourses (<https://webcourses.ucf.edu/>).
- The on-campus class section will be held at the scheduled times (Tuesday and Thursday 1:30-2:45PM) in CREOL 102/103. Students are expected to attend the lectures and exams in person.
- For the remote section, the course will be live streamed and recoded on Zoom at the scheduled times. Zoom invitations as well as the Zoom recordings will be available in Zoom section of Webcourses. All exams will be remote under the Honor code.

Office Hours: Monday and Wednesday 3:00 PM - 4:00 PM or by appointment on Zoom