Instructor: Prof. Aldo D. Migone

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Office Hours: Tuesday 9-11 and 12:15 to 2:15  Thursday: 9-11

Lectures: Tuesday and Thursday 11:00 to 12:15

Topics: Geometrical optics will not be covered. The topics that will be covered include:
the electromagnetic spectrum; radiometry; waves and the wave equation;
harmonic waves; electromagnetic waves; superposition of waves; standing waves;
phase and group velocities; quantization of electromagnetic radiation and
blackbody radiation; emission and absorption of photons by atoms; lasers:
principle of operation and fundamental components; laser operation: a
quantitative approach; types of lasers; interference phenomena; optical
interferometry; Fourier analysis and finite harmonic wave trains; coherence;
Fraunhofer diffraction. Time permitting we will also cover Fresnel diffraction.

Goals: The students are expected to become familiar with all these basic topics in optics
including waves, superposition interference, coherence and diffraction; and, to
develop a clear understanding of how matter (atoms) and light (photons) interact,
how lasers operate and what are their essential components and how to
quantitatively analyze a laser’s performance, and what are the main types of lasers
that exist. The students should be able to demonstrate their familiarity by being
able to solve problems and answer conceptual questions involving all of these
topics.

Type of assignments: Homeworks will be assigned which will include selected lists of
problems, and other selected materials such as additional readings

TENTATIVE Evaluation Plan: a- Home works
   b- Midterms: There will be either one or two midterms,
   c- Final Exam- Comprehensive

TENTATIVE Grading Scale: A: 85-100%  B: 84-75
   C: 74-65  D: 64-50
   F: below 50%