OPTI 544: FOUNDATIONS OF QUANTUM OPTICS, SPRING 2024

Homework: One set roughly every two weeks.

Midterms: Mid-March, late April. Exact time and date TBD

Final: Tuesday May 7, 10:30am-12:30pm

Grading: Weekly homework 20%
Midterm exams 40%
Final exam 40%

Office hours: Jessen: Tuesdays 2-3:30pm, Thursdays 2-3:30pm. Location: Meinel 604
Ian Marsh (TA): TBD. Location: TBD

Questions and requests: email jessen@optics.arizona.edu.

Text: There is no designated text for OPTI 544. In the past I have suggested "Lasers", by P. W. Milonni and J. H. Eberly (ISBN 0471627313) to those who ask for one. This book is a good compilation of semiclassical optical and laser physics, but lacks any serious treatment of Quantum Optics. It is also out of print, though good second-hand copies have so far been easy to find on the web. I provide extensive class notes for the course, and in recent years all but a few students have found those to suffice. Warning: There is a newer book available by Milonni and Eberly called "Laser Physics". It is not the same book and will not be particularly useful for the course so there is no reason to buy it.

Class notes, problem/solution sets, and lectures (slides and video) will be posted online at

https://wp.optics.arizona.edu/opti544/

Other texts that you may or may not find helpful:

"Quantum and Atom Optics", notes by Daniel Steck. Free download at http://atomoptics.uoregon.edu/~dsteck/teaching/quantum-optics/

"Introduction to Quantum Optics", by G. Grynberg, A. Aspect, and C. Fabre.

"Quantum Optics", by M. O. Scully and M. S. Zubairy.

"Elements of Quantum Optics", by P. Meystre and M. Sargent.

"Photons and Atoms: Introduction to Quantum Electrodynamics", by C. Cohen-Tannoudji et al.

"The Quantum Theory of Light", by R. Loudon.

"Optical Resonance and Two-Level Atoms", by Allen and J. H. Eberly.