

# **Lasers - Physics 452**

Instructor: Tom Weinacht (A102) 2-8163

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Textbook: Lasers by P. W. Milonni J. H. Eberly

Supplemental textbook: Modern Optics by Grant R. Fowles

Meeting time: Tues and Thurs 11:00-12:20, Humanities 2047

This course is intended to be an introduction to lasers and modern optics for advanced undergraduates and graduate students. There will be some demonstrations and lab visits.

## Topics:

- I Classical description of dispersion and Absorption – Lorentz Model
- II Two state atoms with classical fields, Density Matrix description
- III Emission and Absorption, Rate Equations
- IV Laser Oscillation: Gain and Threshold
- V Gaussian Beams and Laser Resonators
- VI Optical Coherence
- VII Specific Systems

## Grading:

30% Homework

30% Midterm Exam

40% Final Exam

Problem sets will be handed out on Tuesdays every week and are due at the beginning of class the following Tuesday.

If you have a physical, psychiatric/emotional, medical or learning disability that may impact on your ability to carry out assigned course work, I would urge that you contact the staff in the Disabled Student Services office (DSS), Room 123 ECC (Educational Communication Center), 632-6748/TDD. DSS will review your concerns and determine, with you, what accommodations are necessary and appropriate. All information and documentation of disability is confidential.