Course title: Ultrafast Optical Phenomena
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This class deals with the field of ultrafast optical phenomena. There is no required text. The following topics will be covered:

- Electromagnetic propagation in the presence of gain
- Laser oscillation and cavities
- Ray optics
- Pulse propagation
- Non-linear optical phenomena
- Kerr-lens mode locking
- Short pulse measurement
- Ultrafast techniques

- **Prerequisites:** It is assumed that you have had some exposure to E&M, at the level of an advanced undergraduate course. Knowledge of quantum mechanics is helpful but not required. Undergraduates who are interested in taking this class should contact Dr. Mittleman to discuss these issues.
- **Attendance:** Lecture attendance is REQUIRED. Attendance will be taken.
- **Assignments:** Problem sets will be handed out occasionally. One of the important aspects of this class are the student presentations, which occur towards the end of the semester. This will be discussed during the first day of lecture. The student's grade will be determined by lecture attendance, satisfactory completion of problem sets, and the quality of the student presentations, according to the following:

  Lecture attendance: 50%
  Problem sets: 25%
  In-class oral presentation: 25%

The oral presentation grade will be based on the clarity of arguments, the coverage of essential elements that will be determined by the student's choice of presentation topic, and the legibility and clarity of the powerpoint file.
- **Late assignment policy:** Late assignments will not be accepted.

Over 14 weeks, students will spend 3 hours per week in lecture (42 hours total). The homework assignments should require an average of 106 hours. In addition, the oral presentation will require a minimum of 32 hours of preparation.