



NE313 Jan 3:0

Lasers: Principles and Systems

Instructor

V R Supradeepa

Email: supradeepa@iisc.ac.in

Teaching Assistant

Email:

Department: Centre for Nano Science and Engineering

Course Time: Mon., Wed., Fri., 12:00 - 1:00 PM

Lecture venue: TF-10, CeNSE Building

Detailed Course Page: <http://www.cense.iisc.ac.in/supradeepagroup/index.php/teaching/lasers/>

Announcements

Brief description of the course

This is an intermediate level optics course which builds on the background provided in "Introduction to photonics" offered in our department. Owing to the extensive use of lasers in various fields, we believe a good understanding of these principles is essential for students in all science and engineering disciplines.

Prerequisites

Electromagnetic Fields, Introduction to Photonics

Syllabus

Basic Laser principles, Rate equations, Optical beams and resonators, Laser cavities and feedback, Laser dynamics, Survey of important laser technologies, Nonlinear optical effects in lasers, Optical Communication Amplifiers, Transient behavior in lasers, Q-switching, Mode-locking, Introduction to ultrafast systems

Course outcomes

Extensive Practical Knowledge in Laser Systems

Ability to analyze laser phenomena and apply it to variety of situations

Ability to design and build different laser systems such as Fiber Lasers, Solid State Lasers, Optical

communication amplifiers, pulsed lasers

Grading policy

25% for Mid-term

25% for End-Term

25% for Project Presentation

25% for Term-Paper

Assignments

Resources