

LASER and its applications



Course Name : LASER and Its Applications

Course Duration : 30 Hours

Course Type:CC/DC

Mode: Blended mode

Course Coordinator:

Dr E. Deepak DS'lva

Department of PG Physics, St Aloysius College (Autonomous), Mangaluru

School of Physical Sciences,

St Aloysius (Deemed to be University)

M.No:89700 93263, Emailid: emmanuel_dsilva@stalloysius.edu.in

Course Instructors:

Praveen Prakash Dsouza

Department of PG Physics, St Aloysius College (Autonomous), Mangaluru

School of Physical Sciences,

St Aloysius (Deemed to be University)

M.No: 87732 13845, Email id: praviphysics@gmail.com

Syllabus:

Module 1 (15 hours)

General Introduction and Scope, Interaction of Radiation with Matter, The Einstein Coefficients, Properties of LASER – Directionality, Intensity, Monochromaticity and Coherence.

Module 2 (15 hours)

Basic LASER System – Active medium, Population Inversion Methods (Optical Pumping, Excitation by electrons, Excitation by chemicals and Inelastic Collisions between and Optical Resonator, Specific LASER System - Nd: YAG LASER and CO₂ LASER, Applications of LASER.

Reference Books

1. Ghatak A K, Thyagarajan K, 1991*Optical Electronics*, Cambridge University Press)
2. Gupta A B, 2010,*Modern Optics*, Books and Allied (P) Ltd.
3. Koechner W, 2006 *Solid State LASER Engineering*, Springer, 6th ed.

4. Laud B B, 1985, *LASER and Nonlinear Optics*, Wiley Easterns
5. Siegman A E, 1986, *LASER*, Oxford
6. Silfvast W T, 1998, *LASER Fundamentals*, Cambridge University Press

Mode of Evaluation : Test – 02 & Assignment – 02 (Each Module)