

Laser Systems & Applications (IEME-014)

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PREREQUISITES OF COURSE:

1. Engineering Physics (IPH-201)
2. Engineering Mathematics (IMA-101 & IMA-201)

UNIT-I & II**Introduction:**

Review of elementary quantum physics, Schrodinger equation, concept of coherence, absorption, spontaneous emission and stimulated emission processes, relation between Einstein's A and B coefficients, population inversion, pumping, gain, optical cavities.

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UNIT-III & IV**Lasers & Laser Systems:**

Main components of Laser, principle of Laser action, introduction to general lasers and their types. Three & four level Lasers, CW & Pulsed Lasers, atomic, ionic, molecular, excimer, liquid and solid state Lasers and systems, short pulse generation and Measurement.

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UNIT-V**Applications:**

Laser applications in medicine and surgery, materials processing, optical communication, metrology and LIDAR and holography.

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Text & Reference Books:

1. K.R. Nambiar, "Laser Principles, Types and Application" New Age International.
2. S. A. Ahmad, "Laser concepts and Applications" New Age International.