

PHYS 644- Optoelectronic Processes in Semiconductors_3 (2+1) hrs

1. Energy States in Semiconductors
2. Perturbation of Semiconductors by external parameters
3. Absorption
4. Relationships between Optical constants
5. Absorption spectroscopy
6. Radiative and nonradiative transitions
7. processes in p-n junctions,
8. stimulated emission
9. Excitation of luminescence and lasing in semiconductors
10. Photoelectric emission
11. Photovoltaic and photochemical effects
12. Effect of traps on luminescence
13. Optical characteristics related to mobile electrons
14. Absorption of light by electronic transitions
15. Interaction of radiation with oriented quantum wells,
16. Photoconductivity.

Text Books/ References: -

1- J. Pankov, "Optical process in semiconductors" Dover publications, New York, 1971

2- S. Adachi, "Optical properties of Crystalline and Amorphous Semiconductors", Kluwer Academic Publishers, London, 1999.

3- P. Bahattacharya, "Semiconductor Optoelectronic devices" Prentice Hall, New Jersey, 1998.

4- Shun Lien Chuang, "Physics of Optoelectronics Devices", John Wiley & Sons, New York, 1995.