Physics of semiconductor Nanostructures (PHY 631) 2024-25, 1st Semester

Instructor: Sudipta Dubey

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Prerequisite:

Quantum mechanics, Electronics and Condensed matter physics.

Course Content:

Review of condensed matter physics relevant to semiconductors; Fabrication of quantum nanostructures; Quantum structures and band gap engineering; Transport in quantum structures with applications; Optical properties and applications; Quantum mechanical effect in magneto-transport; Quantum dots; Frontiers in current research

Textbook:

There is no prescribed single textbook. For some topics, the books that may be followed:
1. The Physics of Low-dimensional Semiconductors, John. H. Davies
2. Electronic Transport in Mesoscopic Systems, Supriyo Dutta
Research publications

Class Schedule:

Every Wednesday, Friday from 10.30 a.m. – 12.00 p.m.

Division of Marks

Tentative:

- Assignment/Quiz and presentation: 40 pts
- Mid-Sem: 20 pts
- End-Sem: 30 pts
- Attendance: 10 pts

The division of marks will be finalized after the add/drop period once the total number of students is approximately known.

Attendance policy:
Institute rule will apply. Appropriate action will be taken in case the attendance of a student in the course is not found satisfactory. Attendance may be taken any time during the class.

This is a first course handout and there may be changes as the course progresses depending on the student's performance.