

SYLLABUS :-

Prerequisite - none Introduction to microscale transport phenomena, microscopic picture of heat carriers, electronic structure of solids, electron transport, electron-photon interaction, molecular clusters, energy transport in the forms of waves and particles, scattering and heat generation processes, Boltzmann equation and derivation of classical laws, deviation from classical laws at microscale and their appropriate descriptions, measurement techniques, microscale phenomena, thermoelectric effects, interfacial forces, micromachined sensors and actuators, micro heat pipes, micromixers and microreactors. Text Book: 1. Microscale Energy Transport Eds. C. L. Tien, A. Majumdar and F. Gerner 2. Nanoscale Energy Transport and Conversion : A Parallel Treatment of Electrons, Molecules, Phonons, and photons by Chen, Gang. 3. Quantum Mechanics by L. D. Landau and E.M. Lifshitz 4. Introduction to Solid State Physics by C. Kittel 5. Physics of Semiconductor Devices by S. M. Sze.