

- 1) Title of the Course. Nanoscale Materials (Code : 21)
- 2) Name of the Instructor. Prof. Subodh Kumar De, Dept. of Materials Science
- 3) Brief outline of the Syllabus.

A. Interaction of light with nanoscale materials

Fundamental length scale, Rayleigh and Mie scattering, Extinction coefficient, Plasmon, Metal nanoparticle, Size and shape dependent plasmon, Importance and applications of plasmon.

B. Semiconductor Nanocrystals

Exciton, Variation of energy levels with size, Interrelationship between size and energy band gap, Plasmon in wide band gap semiconductor, Coupling between exciton and plasmon, Metal-Semiconductor heterostructure.

C. Experimental techniques

Size and shape determination, Debye-Scherrer formula, Electron optics, Basic concepts of electron microscope, Elementary knowledge about image analysis.

- 4) No. of lectures. 30
- 5) Duration of each lecture. 90 minutes, Time 11-30 AM - 1 PM, Days Wednesday & Friday
- 6) Contact details of the Instructor. e-mail: msskd, Extn. 1206, Mobile 9432012874