SUBJECT NO-MS60052, SUBJECT NAME- INTRODUCTION TO NANOTECHNOLOGY & NANO-STRUCTURED MATERIALS

LTP- 3-1-0,CRD- 4

SYLLABUS :-

Prerequisite: None

Introduction, Scaling Laws, Electronic and optical properties, Chemical properties, Mechanical properties, Thermal properties, Nanomagnetism, Fluid Mechanics on the nano-scale, Characterization techniques for nanomaterials (Structural, spectroscopic, etc), Morphology of nanomaterials (nanotubes, nanowires, nanobelts, thin films, heterostructures, self assembled, influence and control of defects), Top-down synthesis method (ball milling, nanolithography), Bottom-up synthesis method (sol-gel, soft chemistry, self assembly, inkjet printing, scanning probe techniques), Consolidation of nanocrystalline materials, Carbon based materials, Silicon nanomaterials, Nanocomposites, Biological nanomaterials, Nanomachines and Nanodevices (FETs, MOSFETs, Logic Devices, nanosensors, imaging and display devices), Nanomaterials in energy, Safety issues in nanomaterials