ME 4875/MTE 575 : Introduction to Nanomaterials and Nanotechnology

This course introduces students to current developments in nanoscale science and technology. The current advance of materials and devices constituting of building blocks of metals, semiconductors, ceramics or polymers that are nanometer size (1-100 nm) are reviewed. The profound implications for technology and science of this research field are discussed. The differences of the properties of matter on the nanometer scale from those on the macroscopic scale due to the size confinement, predominance of interfacial phenomena and quantum mechanics are studied. The main issues and techniques relevant to science and technologies on the nanometer scale are considered. New developments in this field and future perspectives are presented. Topics covered include: fabrication of nanoscale structures, characterization at nanoscale, molecular electronics, nanoscale mechanics, new architecture, nano-optics and societal impacts.

Department

Mechanical and Materials Engineering

Category

Category I (offered at least 1x per Year)

Units 1/3

Recommended Background

ES 2001 Introduction to Materials or equivalent Some sections of this course may be offered as Writing Intensive (WI).