Introduction to Nanotechnology

- Textbook：
  Nanophysics and Nanotechnology
  by:
  Edward L. Wolf

Instructor: ***H. Hosseinkhani***
E-mail: **hosseinkhani@yahoo.com**

Classroom: A209
Time: Thursday; 13:20 -16:10 PM
Office hour: Thur., 10:00-11:30 AM or by appointment

Sep 15	Introduction	Hossein
Sep 22	Systematic of Making Things Smaller	Hossein
Sep 29	What are limits to smallness	Hossein
Oct 6	Quantum Nature of the Nanoworld	CW Chen
Oct 13	Quantum Consequence for the Macroworld	CW Chen
Oct 20		
Oct 27	Self-Assmbled Nano-Strauctur e in Nature and Industry	Hossein
Nov 3		
Nov 10	**Midterm**	
Nov 17	Physics-based Experimental Approaches to Nanofabrication and Nanotechnology	Hossein
Nov 24		
Dec 1	Quantum Technologies based on Magnetism, Electron and Nuclear Spin, and Superconductivity	KH Chen
Dec 8		
Dec 15	Silicon Nanoeletronic and Beyond	Hossein
Dec 22		
Dec 29	Looking into the Future	LC Chen
Jan 5		
Jan 12	**Final Exam**	

Objective of the course

The course, Introduction to Nanotechnology (IN), will focus on understanding of the basic molecular structure principals of Nano-materials. It will address the molecular structures of various materials. The long term goal of this course is to teach molecular design of materials for a broad range of applications. A brief history of biological materials and its future perspective as well as its impact to the society will be also discussed.

Evaluation; Score: 100%:

Mid-term Exam: 30%
Final Exam: 30%
Scientific Activity: 40 % (Home work, Innovation Design)

Contents

- Introduction (*Prof. Hossein*)
- Systematic of Making Things Smaller (*Prof. Hossein*)
- What are limits to smallness (*Prof. Hossein*)
- Quantum Nature of the Nano-world (*Prof. CW Chen*)
- Quantum Consequence for the Macro-world (*Prof. CW Chen*)
- Self-Assembled Nano-Structure in Nature and Industry (*Prof. Hossein*)
- Physical-based Experimental Approaches to Nanofabrication and Nanotechnology (*Prof. Hossein*)

- Mid-term Exam

Contents

- Quantum Technologies based on Magnetism, Electron and Nuclear Spin, and Superconductivity (*Prof. KH Chen*)
- Silicon Nanoeletronic and Beyond (*Prof. Hossein*)
- Looking into the Future (*Prof. LC Chen*)

- Final Exam