PHYS680: Introduction to Nanophysics

Semester: Fall 2013
Credit hours: 3
Class time: Tuesday and Thursday 2:00PM-3:15PM
Class room: La Tourette Hall 227
Instructor: Zhili Xiao
Office: La Tourette Hall Room # 212
Tel: 815-753-3506 or 630-252-8762;
Emails: zxiao@niu.edu or xiao@anl.gov
Office Hours: Tuesdays and Thursdays, 10:00 AM – 11:30AM

Textbooks:
- Nanophysics and Nanotechnology: An Introduction to Modern Concepts in Nanoscience, 2nd Edition
  Edward L. Wolf, ISBN: 978-3-527-40651-7
- Mesoscopic Electronics in Solid State Nanostructures
  Thomas Heinzel, ISBN: 978-3-527-40638-8

Grading:
- Mid-term 20%; final exam 30 %; homework (20 %);
- presentation: 20%; attendance and class interaction 10%.

Course Description
Characterization, fabrication, and physical properties of nanostructures. Topics may include length scales; fabrication by top-down and bottom-up approaches; probing techniques; surfaces, interfaces, and layered devices; quantum wires and quantum point contact; quantum dots; nanomagnetism and spintronics; nanosuperconductivity; nanophotonics; nanomechanics; carbon nanotubes and graphene, and Qubits.

Prerequisites & Notes
PHYS 560 or PHYS 660 and PHYS 580 or PHYS 666, or consent of the department.

Accessibility Statement
Northern Illinois University is committed to providing an accessible educational environment in collaboration with the Disability Resource Center (DRC). Any student requiring an academic accommodation due to a disability should let his or her faculty member know as soon as possible. Students who need academic accommodations based on the impact of a disability will be encouraged to contact the DRC if they have not done so already. The DRC is located on the 4th floor of the Health Services Building, and can be reached at 815-753-1303 (V) or drc@niu.edu.