Course Syllabus and Outline

Selected Topics in Nanoscience and Nanotechnology

Chemistry 4399/5399

Spring Semester, 2006

Instructor: Dr. Wei Zhao
Lecture: 7:25 pm-8:40 pm, TU & TH in SCLB 265
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Office hours:
Tuesday, Thursday and Friday 10:30 am-11:30 am, or by appointment.

Text: Nanostructures and Nanomaterials by Guozhong Cao

Reference Texts:

Course Objectives

This course targets upper-level undergraduate students and graduate students. The objective is to make information about the rapidly evolving areas of Nanoscience and Nanotechnology available to a broad range of students. At undergraduate level, we expect that the course can help undergraduate students learn if there are topics relevant to their future plans and to equip such students as they enter graduate schools or the work places. At the graduate student level, we expect that the course can provide useful information for their thesis work and planning of research efforts. We anticipate that the participation in the course may encourage near and long term interactions with the interdisciplinary nanoscience research groups at UALR and assist students in contributing to this exciting field.

Course Materials and Contents

A textbook and the periodical literature will be used in the course. For some research topics, the periodical literature will be the major source. Handouts of journal articles will be given out prior to discussing them in class so that they can be read beforehand. The articles will then be covered in detail in class. The choice of specific topics to cover is open ended. We can study topics that the class is specifically interested in. However, we will start from the principles governing the properties of nanostructures, since this is a good point of departure into other areas.
The following is a proposed outline for the course.

* Principles of nanoscale phenomena.
* Synthesis and characterization of nanostructures.
* Electronic and optical properties of selected nanomaterials (nanocrystals, nanotubes and nanowires).
* Potential applications in drug discovery, biomedical diagnostics, genomics and proteomics.
* Nanomaterials for drug delivery.
* Nanomedicine.

As a part of this course, we will invite guest lecturers on some selected topics, each for about 30 minutes, followed by lecture discussions. In particular, in conjunction with a Nanoscience Workshop in next May, leading scientists in the nanofields will be invited to give lectures in UALR campus and students are encouraged to interact with them on the topics interested.

**Course Evaluation Methods and Grading**

The total course grade will be based on four homework assignments related to some topic research questions, one course exam, and one term paper and presentation (oral or poster). Each homework assignment counts 15% of the course grade, the exam 20%, and the paper and presentation 20%. The course grade will be based on the following percentage minimums: 90% A, 80% B, 70% C, and 60% D.

Late Policy: A late-submission (not more than 48 hours after the due date) for homework is acceptable. However, points (10%) will be deducted for late submission.

**UALR POLICY ON STUDENTS WITH DISABILITY**

It is the policy of UALR to accommodate students with disabilities, pursuant to federal law and state law. Any student with a disability who needs accommodation, for example in arrangements for seating, examinations, note-taking should inform the instructor at the beginning of the course. It is also the policy and practice of UALR to make web-based information accessible to students with disabilities. If you, as a student with a disability, have difficulty accessing any part of the online course materials for this class, please notify the instructor immediately. The chair of the department offering this course is also available to assist with accommodations. Students with disabilities are encouraged to contact Disability Support Services, telephone 501-569-3143 (v/tty), and on the Web at [http://www.ualr.edu/dssdept/](http://www.ualr.edu/dssdept/)