

Nanotechnology

Spring 2008

In 1960, Richard Feynman asked the question, “What would happen if we could arrange atoms one by one the way we want them?” Today, the emerging fields of nanoscience and nanotechnology are enabling control of the material world at the scale of atoms and molecules. Nanotechnology is inherently interdisciplinary and allows for new approaches to education through interdisciplinary connections between chemistry, physics, biology, and materials science. This broad interdisciplinarity contributes much to the novelty of this new field, and will likely cause widespread change in the way science is pursued in the 21st century. These aspects of nanoscale science have the potential to generate strong interest among students. This course will introduce students to many aspects of nanoscience and nanotechnology.

Texts: Nanotechnology: A Gentle Introduction to the Next Big Idea by Mark Ratner and Daniel Ratner, Nanotechnology: Basic Science and Emerging Technologies by Wilson, et. Al..

Instructor: James Espinosa

Grading: Your grade will be based upon your performance on: Class participation (10 points per meeting)

Activity assignments (5 @30 points each) 150

Laboratory Reports (6x30 each) 180 points

Project: 150 points

Topic description (1 page, week 2) 10 points

Annotated Bibliography (week 4) 20 points

Outline and updated bibliography (week 6) 20 points

5-7 page Report (draft week 8, due week 10) 50 points

Project presentation (week 10) 50 points

Seminar Reaction paper (1x20 points) 20 points

Midterm exam 100 points

Final Exam (over second half of the course material) 100 points

The Rhodes College Honor code applies to all your work and should be reaffirmed on each assignment, paper, and exam you turn in.

Comment on Collaboration:

We strongly encourage you to create a fun and productive collaborative learning environment in this class. Working with others to prepare for class discussions, exams, and laboratories will vastly enrich your learning experience. Similarly we encourage you to let friends read and discuss preliminary drafts of your science talk reaction paper, literature assignments and project report. If you do so, make sure to acknowledge their help alongside the affirmation of the honor code at the beginning or end of the assignment.

Absences:

Because class discussion is part of your grade for the course, you are expected to be at each class meeting. Class meetings and experiments missed because of unexcused absences receive a grade of zero and cannot be retaken. Class meetings and experiments missed because of excused absences also receive a grade of zero but can receive normal credit if the student reschedules and carries out a makeup exam or laboratory within one week of returning to campus or by making arrangement with the instructor.