

MASC 350L

Nanostructured Materials: Design, Synthesis, and Processing

Instructor: Prof. Andrea Armani, Dept. of Chemical Engineering and Materials Science,
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Class Hours: Tuesday/Thursday 8:00-9:20am

Office Hours: immediately before/after class

Textbook/Reference material:

There is no specific textbook. Reference materials, such as review articles, will be posted periodically on Blackboard.

Course Vision:

This course is designed to discuss Nanotechnology from the bottom up and top down. In that sense, we will first discuss the building blocks of nanotechnology, or structures like nanocrystals, polymers and nanowires/tubes, and their fundamental properties (optical, electrical, mechanical, etc). From there, we will use these individual structures to build more complex devices using methods ranging from self-assembly to lithography, and different applications.

Course Objective:

The objective of this course is to expose students to modern engineering tools and challenges and teach them how to approach and solve problems which have immediate relevance. A secondary objective is to teach students how to express research results in a scientific manner.

Grading:

Homework	5%
Labs	35%
Midterm	25%
Final	35%

Expectations/Information for Assignments, Exams and Papers:

Homework assignments:

There will be two problems sets. They are due at the beginning of class. Late homeworks are not accepted.

In addition, students are expected to complete reading assignments. Reading assignments will be posted on Blackboard.

Labs:

There are six labs, which are divided into two categories: 1) synthesis of nanomaterials and 2) applications nanomaterials. The lab manual and the template for the lab report are posted on Blackboard. It is expected that you will have read the lab manual and the assigned pre-lab reading before coming to lab. Although you are working with a partner, every student should submit their own lab report. The grading sheet detailing how the lab report will be graded is on Blackboard.

If a lab report is plagiarized, the student will receive 0pts for the lab report. There is a ppt presentation detailing what is considered plagiarism on Blackboard. If you have any questions, please ask.

Exams:

There is 1 midterm and 1 final exam.

The midterm and final exam will consist of 5-10 problems, structured to allow the entire exam to be completed in a single class period. The final exam will cover material from the entire semester. A sheet of crucial equations and mathematical formulas will be attached to the exams. Nothing except a pencil or pen is allowed (no calculators, class notes, slides, papers, problem sets or solutions). The midterm and final from Spring 2015 MASC 350L are assigned as homework. However, it is important to remember that the course content does vary slightly every semester (as new discoveries are made).

Detailed Course Outline:

Posted on Blackboard

Statement on Academic Integrity:

USC seeks to maintain an optimal learning environment. General principles of academic honesty include the concept of respect for the intellectual property of others, the expectation that individual work will be submitted unless otherwise allowed by an instructor, and the obligations both to protect ones own academic work from misuse by others as well as to avoid using anothers work as ones own. All students are expected to understand and abide by these principles. Scampus, the Student Guidebook, contains the Student Conduct Code in Section 11.00, while the recommended sanctions are located in Appendix A: <http://www.usc.edu/dept/publications/SCAMPUS/gov/>. Students will be referred to the Office of Student Judicial Affairs and Community Standards for further review, should there be any suspicion of academic dishonesty. The Review process can be found at: <http://www.usc.edu/student-affairs/SJACS/>.

Plagiarism (copying or modifying someone else's work and presenting it as your own) and other forms of cheating will not be tolerated. Please ask the instructor if you have questions about proper behavior.

Statement of Students with Disabilities:

Any student requesting academic accommodations based on a disability is required to register with Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP. Please be sure the letter is delivered to me (or the TA) as early in the semester as possible. DSP is located in STU 301 and is open 8:30am – 5:00pm, Monday through Friday. The phone number for DSP is (213) 740-0776.