INNOLUX CORP. v. PATENT OF SEMICONDUCTOR ENERGY LABORATORY CO., LTD.

IPR2013-00068

Tuesday & Thursday, 3:50-5:05 pm, EB3 2124

Contact Information

Professor: Dr. Michael Escuti <mjescuti@ncsu.edu>
Office/Phone: 432 MRC, 513-7363

Educational Resources

Since active student participation is essential to the impact (and fun!) of this course, we strongly encourage students to take advantage of the online resources, and your colleagues. We welcome all questions (at least those nominally course or career related) during lecture or by contacting us directly.

Required Textbook: Nanotechnology: Understanding Small Systems (Rogers et al.)
Website, Calendar: https://moodle1314-courses.wolfware.ncsu.edu/course/view.php?id=2678
Discussion Tool: piazza.com/ncsu/fall2013/e304/home
Gradebook: https://classic.wolfware.ncsu.edu/wrap-bin/gradebook-view/e:298::005:8:2013

Course Description

This multi-disciplinary course provides an introduction to scientific principles and applications of nano-science and technology to students coming from a wide variety of backgrounds. The course takes a systems-based approach to demonstrate how different nano-concepts come together to create systems with unique functions and characteristics. Nano and macroscale systems are compared to emphasize the fundamental differences between phenomena at different scales.

Evaluation & Grading Policy

A weighted average grade will be calculated as follows:

Final Exam = 25 %, Tests (x3) = 18 % (ea.), Homework = 15 %, Project = 6 %

Overall grades in the course will follow University guidelines:

Score	*Letter Grade*	*Score*	*Letter Grade*	*Score*	*Letter Grade*	*Score*	*Letter Grade*
$97 \leq X$	=> A+	$87 \leq X < 90$	=> B+	$77 \leq X < 80$	=> C+	$67 \leq X < 70$	=> D+
$93 \leq X < 97$	=> A	$83 \leq X < 87$	=> B	$73 \leq X < 77$	=> C	$63 \leq X < 67$	=> D
$90 \leq X < 93$	=> A-	$80 \leq X < 83$	=> B-	$70 \leq X < 73$	=> C-	$60 \leq X < 63$	=> D-

Nearly all lectures will be in-person as scheduled. Occasionally, due to Professor travel, a lecture will be recorded and distributed via Moodle/Mediasite. This will be followed up by a brief online Quiz to give immediate feedback on the lecture content.

Some of our class time activities will go beyond the Professor delivering a lecture. We will have group active learning and discussion, based at least on the assigned reading and homework.

Exam/Test Policy

There will be three (3) in-class Tests, and a Final Exam. Brief, in-class reviews will be organized, and Instructional Objectives will be posted one week ahead to guide student study.

If a Test or Final Exam is missed without a certified medical excuse or prior instructor approval, a zero will be averaged into your grade. Certified excuses and prior approval will be dealt with individually. A single makeup exam for Tests 1 thru 3 will be offered, held at a designated time at the end of the semester, and before the Final Exam. This makeup exam will include the contents assessed by Tests 1 thru 3, regardless of which of these is being "made up". A makeup for the Final Exam will be arranged on a case-by-case basis.

The Final Exam will be comprehensive.

Homework Policy

There will be approximately 8 homework assignments during the semester. All will be delivered and submitted by the course website. These may include online questions, book problems, essays, as well as PDF submissions, and even peer-grading (if I can get it working!).

It is the responsibility of the students to check the course website to learn the due dates AND times of the assignments. No late homework will be accepted.

However, the lowest homework assignment score will be automatically dropped, i.e., only the highest 7 of the 8 homeworks will count toward the overall grade.

Textbook Reading Policy

Students are expected to actually read the assigned textbook sections - after all, this topic is immensely fascinating, and the textbook is highly readable! This is part of your homework. This will greatly facilitate and accelerate student learning.

Expenses

Cost of the textbook (~$100), via the link above or NCSU bookstore (etc).

Attendance

Full participation in lectures and examinations is expected of all students. An attendance record will be kept and used to assess student participation where necessary. Certified excuses and prior approval will be dealt with individually, and can be easily arranged via email beforehand. Excused lecture absences must be arranged beforehand, by email to the instructor. Unexcused absences are considered considered as lack of participation.

Instructors' Commitment

We aim to provide you with the best course materials and to go out of our way to assist you in learning the material. You can expect your instructors to be courteous, respectful, and punctual; to be well organized and prepared for lectures; to answer questions clearly and in a non-negative fashion; to be available during office hours or notify you beforehand if we are unable to kept them; to grade uniformly and consistently according to posted guidelines.

For Students with Disabilities

Reasonable accommodations will be made for students with verifiable disabilities. In order to take advantage of available accommodations, students must register with the Disability Services Office. For information on NC State's support and policies for with students with disabilities, see this link. They will coordinate with course instructors for the right accommodations.

Academic Integrity

University policy will be followed. Note that teamwork is strongly encouraged (as it is an important part of being a successful engineer), but plagiarism/cheating is not be tolerated at all. You are expected to fully understand and author any assignments even though you may work on them with your classmates on out-of-class assignments. If you do not meet this standard, it is far better to discuss the situation with the professor than to dig yourself into a hole (i.e. cheating) that will have significant long-term consequences.

3. ***Discuss*** the current and potential impact of nanoscience in applications, including mechanics, electronics, photonics, and biotechnology.
4. ***Calculate*** and/or ***estimate*** of the electronic, optical, mechanical properties of materials at nano-scale.
5. ***Describe*** operational principles of devices based on nano-scale patterning or nano-structured materials and calculate their properties.
6. ***Articulate*** the early milestones, key personalities, and current challenges of nanotechnology.

Topics & Lectures

Week	Date	Lecture #	Topic	Textbook	HW
1	8/22	0.1	Course Introduction	-	
2	8/27	1.1	Intro, Miniturization	1	
	8/29	2.1		2	
3	9/3	X	X	X	X
	9/5	X	X	X	X
4	9/10	3.1	Nanophysics	3	1
	9/12	3.2			
5	9/17	4.1	Nanomaterials	4	2
	9/19	4.2		4	
6	9/24	-	Test 1		3 (~)
	9/26	5.1	Nanomechanics	5	
7	10/1	5.2		5	
	10/3	5.3		5	
8	10/8	5.4		5	
	10/10	Fall Break			
9	10/15	-	Test 2		4 (~)
	10/17	6.1	Nanoelectronics	6	
10	10/22	6.2		6	
	10/24	6.3		6	
11	10/29	6.4		6	5
	10/31	7.1	Nanoscale Heat Transfer	7	
12	11/5	7.2		7	
	11/7	8.1	Nanophotonics	8	6
13	11/12	8.2		8	
	11/14	8.3		8	
14	11/19	-	Test 3		7 (~)
	11/21	9.1	Nanofluidics	9	

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