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Fall 2007

Course Description	Microsystem technology (MEMS) is an enabling tool for optical and RF applications. To design microsystems, for its multidisciplinary nature, designers are often challenged by overwhelming demands on understanding in many different subject areas such as mechanics, optics, electromagnetism, circuits, material science, microfabrication, numerical analysis, and so forth, and on ability to weave such knowledge either to invent new designs or to	
	improve the existing ones. The objective of this special topic course is to provide fundamentals in some of the subjects listed above and to present methods to integrate such knowledge in microsystem design, especially for optical and RF applications.	
Instructor	Dr. Dooyoung Hah, 229 EE Building. Ph: 578-5532. dyhah@lsu.edu	
Lecture	MWF 1:40 – 2:30 AM, 149 EE Building	
Office Hours	MW 4:30 – 5:30 PM, TTh 4:00 – 5:30 PM, other times by appointment only	
Course Homepage	http://www.ece.lsu.edu/dyhah/ee7200-1_fall2007/ee7200-1_fall2007.html	
Prerequisite or Co-requisite	EE 7240 (Integrated circuit engineering) or consent to instructor	
Textbook	Handouts	
References	<ul> <li>Senturia, Microsystem Design, Kluwer, 2000</li> <li>Madou, Fundamentals of Microfabrication, CRC, 2002</li> <li>Rebeiz, RF MEMS, Wiley, 2002</li> <li>* First two books in reserve section of Middleton library – 1 day check-out</li> </ul>	

Topics Covered	✓ Introduction to microsystem technology		
_	✓ Review - Microfabrication		
	✓ Introduction to mechanics of materials		
	$\checkmark$ Actuators		
	✓ Optical MEMS devices and applications		
	✓ Optical MEMS for display applications (DMD and GLV)		
	✓ RF MEMS devices and applications		
	✓ Design with foundry services (MUMPs)		
	* <u>Note</u> : Not all topics may be covered, and some related material not listed above may be		
	included.		
Grading Policy	The points are accumulated in the following manner:		
	✓ Homework & Attendance	10%	
	✓ Midterm Exam (in-lecture)	40% (Oct. 19, Fri.)	
	✓ Final exam	<u>50%</u> (Dec. 14, Fri. 3:00-5:00PM)	
	Total: 100%		

<u>Grading Policy</u>: Final letter grades will be given based on the following criterion. A: 100–85, B: 84.99–70, C: 69.99–55, D: 54.99–40, F: 39.99–0

## **Regrade Policy:**

All questions regarding the grading of any assignment/exam except the final exam are handled *exclusively* through *written* request and will *only* be accepted within the first week after grading is completed, announced in class and the assignment is made available. To submit a regrade request, print/type your name on a separate sheet of paper and include a concise explanation of all your concerns/questions and JUSTIFY why you think you deserve additional credit. *Staple* this sheet to the front of your graded assignment/exam and resubmit it to your instructor during office hours. The assignment will be regraded in its entirety and returned to you. If you continue to have concerns, arrange for an appointment with your instructor to discuss the issue.

## **Examinations / Quizzes / Homeworks:**

Examinations are given on the dates indicated above. Schedule conflicts must be resolved prior to the exam date and **NO** makeup exams are given. All exams will be closed book, closed notes. Calculators may or may not be allowed depending on the examination content (i.e.

learn to think without them!). When allowed, calculators may only be used for simple algebraic and trigonomentric operations (i.e. no programmable features).

Quizzes may be given throughout the semester either in the beginning or at the end of lecture but will not be graded.

## Late homework submission will not be accepted and no credits will be given.

## **General Class Procedures and Office Hours:**

Students are responsible for all announcements made in lecture. Course information, announcements and grades will also typically be posted on the course website or on your instructors' door. It is a sound practice to check these locations periodically for important updates and information you may have missed.

Assistance is available from the instructor during office hours; however, do not expect him to do your homework for you! Carefully prepare your questions beforehand and answer as many of them as possible for yourself. Please observe the posted office hours for this course and confine your visits to those time slots. If the posted hours conflict with your schedule, you can make an appointment and alternate arrangements will be made to accommodate you. DON'T WAIT UNTIL THE LAST MINUTE TO ASK FOR HELP!

**LEARN TO USE ELECTRONIC MAIL (E-MAIL)!** You are encouraged to use your PAWS computer account and electronic mail as this is a great way to communicate with your instructor for this course. It will improve the response time for most of your questions and effectively extends office hours during which you can get questions answered. Your instructor regularly checks and responds to his email. Students NOT using the PAWS account should have it set to forward all campus correspondence.