EEE 688/804 MEMS Evaluation

Dr. Lynn Fuller

Webpage: http://people.rit.edu/lffeee
Rochester Institute of Technology
82 Lomb Memorial Drive
Rochester, NY 14623-5604
Tel (585) 475-2035

Email: Lynn.Fuller@rit.edu
Department webpage: http://www.microe.rit.edu

3-4-2013 Out_688.ppt
OUTLINE

Course Description
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EEE 688/804 COURSE DESCRIPTION

0301-688-01  MEMS Systems Evaluation
0301-804-01
0305-688-01

This course will introduce students to MEMS with an emphasis on evaluation, test and integration of MEMS devices into Microsystems.

Class 4, Lab 0, Credit 4 (Sp)
IEEE 688/804 COURSE DETAILS

IEEE 688/804  MEMS Systems Evaluation

Prerequisites: Senior or graduate standing in engineering with permission of instructor.

Course Goals: Learn about MEMS devices specifically evaluation, test, and integration of MEMS devices into Microsystems.

Format: The lecture meets two times per week for 1 hour 40 minutes

Laboratory: none

Meeting Days: T, R
Time: 8:00-10:00 am
Lecture Room: 09-1159

Grade: HW Assignments 50%
Quizzes and Exams 50%
## Rochester Institute of Technology
### Dr. Lynn Fuller  Electrical and Microelectronic Engineering

### EEE 688/804 MEMS Test and Evaluation (Spring 2013)  March 4, 2013

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<tr>
<th>Lesson No.</th>
<th>Discussion Topic</th>
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<th>Assignments</th>
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| 1.         | Orientation, History of MEMS at RIT | [Out 688.ppt](#)  
[History of MEMS at RIT](#)  
[Smart Phone Labs](#) | Visit course webpage  
HW on History of MEMS  
HW on Smart Phone Labs |
| 2.         | CMOS IC’S, Devices and Sensors Testing of CMOS Wafers | [CMOSTestingJohnGalt1.pdf](#)  
[CMOSTEST1.pdf](#)  
[CMOS Testing.wmv](#) | HW on JohnGalt Testchip  
HW on CMOS Test |
| 3.         | Packaging for MEMS and Microsystems Resistors for Heaters & Sensors | [RIT Package.pdf](#)  
[resistor_mems.pdf](#)  
[Resistors Poly.xls](#)  
[Diaphragm Deflection.wmv](#)  
[AD534.pdf](#) | Visit Labnotes on PCB’s  
HW on Resistor MEMS  
Read AD534.pdf |
| 4.         | MEMS Resistor Lab RIT Gas Flow Sensor Anemometer Lab AD534 Multiplier Chip | [Resistor Lab](#)  
[RIT Gas Flow Sensor.ppt](#)  
[Gas Flow.wmv](#)  
[Anemometer Lab](#) | HW on Resistor Lab  
HW on Gas Flow Sensors  
HW on Anemometer |
| 5.         | Piezoresistance in Silicon MEM Mechanical Fundamentals Pressure Sensors | [Piezoresistance.pdf](#)  
[MEM MECH.pdf](#)  
[Pressure Sensor Paper.pdf](#) | HW on Piezoresistance  
HW on MEM MECH  
Read Pressure Sensor Paper |
[Pressure Sensor Lab.pdf](#)  
[Bridge Balance.xls](#)  
[Diaphragm Calculations.xls](#)  
[MPX2202.pdf](#) | HW on Pressure Sensor Lab  
View all Reference Documents |
Textbook:
1. None

References:
6. Micromachined Transducers, Kovacs, McGraw Hill
HOMEWORK FORMAT GUIDELINES

At the top of the front page include the following information:

Rochester Institute of Technology
Microelectronic Engineering
EEE 688/804- Assignment Description

Your Name
Date

2. Name/date/page number on each page
3. Use 8.5”x11” paper with clean straight edges (no spiral notebook paper)
4. Leave room on the left margin for 3 hole punch.
5. Staple pages with one staple in top left at 45°.
6. Use black ink, avoid color because it will not copy well.
7. Type
8. Computer simulations must consist of a summary page followed by the hard copies of the data with key results underlined or boxed.
9. Covers and title pages should feed through the copier also.
10. Homework is due 1 week after finishing the module. Late homework will be graded but may have the grade lowered.