ROCHESTER INSTITUTE OF TECHNOLOGY
MICROELECTRONIC ENGINEERING

EEEE 587-787 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

Rochester Institute of Technology
Microelectronic Engineering

1-17-2014 Out_787.ppt
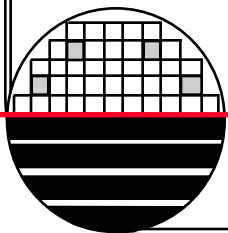
OUTLINE

Course Description
Course Details
Instructor Information
Lecture Schedule
Text/References
HW Format Guidelines
Lab Notebook Guidelines
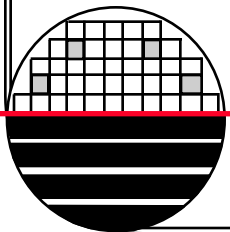
EEEE 587-787 COURSE DESCRIPTION

Course number: EEEE-787
Name of Course: MEMS Evaluation

This course focuses on evaluation of MEMS, microsystems and microelectromechanical motion devices utilizing MEMS testing and characterization. Evaluations are performed using performance evaluation matrices, comprehensive performance analysis and functionality. Applications of advanced software and hardware in MEMS evaluation will be covered.

Prerequisite(s): Graduate Standing in EE
Co-requisite: None
Class 3, Lab 0, Credit 3 (S)

Rochester Institute of Technology
Microelectronic Engineering
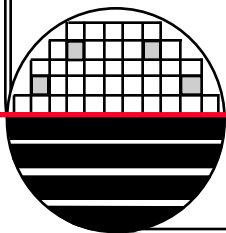
EEEE 587-787 COURSE DETAILS

EEEE 587-787 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 three times per week for 50 minutes

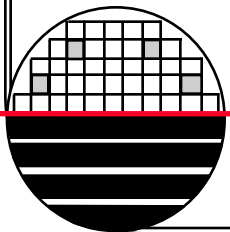**Laboratory:**   none

Meeting Days: M, W, F
Time: 1:00-1:50 pm
Lecture Room: GOL-1435

Grade:	HW Assignments	50%
	Quizzes and Exams	50%

Rochester Institute of Technology
Microelectronic Engineering

http://people.rit.edu/lffeee

Rochester Institute of Technology
Dr. Lynn Fuller Electrical and Microelectronic Engineering

EEEE 587/787 MEMS Test and Evaluation (Spring 2014)   **January 17, 2014**

Lesson No.	Discussion Topic	Reference Documents	Assignments
1.	Orientation, History of MEMS at RIT	Out_787.ppt	Visit course webpage
2.	History of MEMS at RIT	History of MEMS at RIT	HW on History of MEMS
3.	Smart Phone Labs	Smart Phone Labs	HW on Smart Phone Labs
4.	Resistors for Heaters & Sensors AD534 Multiplier Chip	resistor_mems.pdf Resistors_Poly.xls Diaphragm Deflection.wmv AD534.pdf	HW on Resistor MEMS Read AD534.pdf
5.	MEMS Resistor Lab	Resistor Lab	HW on Resistor Lab
6.	RIT Gas Flow Sensor Anemometer Lab	RIT Gas Flow Sensor.ppt Gas_Flow.wmv Anemometer Lab	HW on Gas Flow Sensors HW on Anemometer
7.	Piezoresistance in Silicon	Piezoresistance.pdf	HW on Piezoresistance
8.	MEM Mechanical Fundamentals	MEM_MECH.pdf	HW on MEM MECH
9.	Pressure Sensors	Pressure Sensor Paper.pdf Bridge_Balance.xls Diaphragm Calculations.xls MPX2202.pdf	Read Pressure Sensor Paper HW on Pressure Sensor Lab View all Reference Documents
10.	Thin Film Deposition for MEMS	mem_dep.ppt	HW on MEMS Deposition
11.	Lithography for MEMS	mem_lith.ppt Lift-Off.pdf	HW on MEMS Lithography

The course schedule is on Dr. Fuller's webpage
This is the plan but changes are expected and this page
will be updated regularly.

TEXTBOOK/REFERENCES

Textbook:
1. None

References:
1. Fundamentals of Microfabrication, Marc Madou, CRC Press, 1997.
2. Micromechanics and MEMs, Edited by William S. Trimmer, IEEE Press, 1997.
3. Microsensors, Edited by Richard S. Muller, IEEE Press, 1991.
4. Handbook of Microlithography, Micromachining, and Microfabrication, Editor P. Rai-Choudhury, SPIE-The International Society for Optical Engineering, 1997.
5. "Journal of Microelectromechanical Systems", Joint IEEE/ASME Publication.
6. Micromachined Transducers, Kovacs, McGraw Hill
7. Microsystem Design, Stephen D. Senturia, Kluwer Academic Publishers, 2001

Rochester Institute of Technology
Microelectronic Engineering
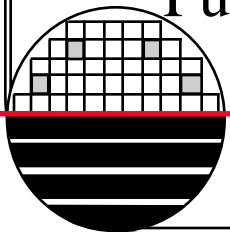
HOMEWORK FORMAT GUIDLINES

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

Rochester Institute of Technology   **Your Name**
Microelectronic Engineering   **Date**
EEEE 688/804- Assignment Description

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.

Rochester Institute of Technology
Microelectronic Engineering