

ENEE 417 - Fall 2005 Course Description

1. Course: ENEE 417 Microelectronics Design Laboratory (2 credits)
2. Place & Time: Lecture: Room EGR 1202; W 09:00-09:50  
Labs: Room AVW 1330; Section 1: Tu 14:00-16:50, Section 2: M 09:00-11:50,  
Section 3: Th 14:00-16:50, Section 4: M 13:00-15:50, Section 5: F 09:00-11:50
3. Instructor: R. W. Newcomb  
Office: AVWII-1347; MSLab: AVWII-1362  
Phones: Office: (301) 405-3662  
Home: (301) 622-0177 (before 9:30pm)  
Office Hours: Probably MW 16:15 - 16:45  
email address: newcomb@eng.umd.edu; URL: <http://www.ee.umd.edu/newcomb/mslab.html>
4. Teaching Assistants: Section 1 (Tu 14-17): RWN, email: newcomb@eng.umd.edu  
Section 2 (M 9-12): Ms. Azadeh Davoodi, email: azade@Glue.umd.edu  
Section 3 (Th 14-17), Ms. Yin Yin Zhao, email: yinyin@Glue.umd.edu  
Section 4 (M 13-16): Ms. Yiming Zhai, , email: ymzhai@Glue.umd.edu  
Section 5 (F 9-12): Mr. Chris Saunders, email: saunders.chr@Glue.umd.edu
5. Prerequisite: ENEE 302-312 or consent of instructor  
Recommended Textbook: R. H. Bishop, "LabVIEW 7 Express, Student Edition" Prentice Hall, Upper Saddle River, NJ, 2006, and papers from the literature  
Recommended Programs: Spice (on the SUNS); evaluation versions of PSpice for PCs; MAGIC (on the SUNS) (for VLSI layout); Student Versions of LabVIEW, MATHCAD and/or MATLAB;
6. References: Journal Articles from: IEEE Journal of Solid-State Circuits, Electronics Letters, IEEE Transactions on Circuits and Systems, IEE Transactions, Solid State Electronics, International Journal of Electronics, etc..
7. Course files: (when installed) Useful files can be downloaded from the web:  
[http://www.ece.umd.edu/newcomb/courses/fall2005/417/ENEE417\\_fall2005.html](http://www.ece.umd.edu/newcomb/courses/fall2005/417/ENEE417_fall2005.html)
8. Course Description: This course is a design oriented laboratory course which changes content semester by semester dependent upon the faculty involved in its instruction. This semester it will comprise about seven individualized experiments in the area of circuit design with emphasis upon automated testing. A list of the intended experiments is on the Time Schedule for the course. Some of the designs are of a common type but there will be one, called the Base Paper design, which will be individualized for a given student. The Base Paper design will be based upon a circuit in a well refereed published journal paper. The Base Paper is chosen by the student and will lead to a formal design report.
9. Course Operation: Lectures are scheduled for once per week and will cover background needed on the common types of experiments to make the designs. Most experiments will need a Spice type of simulation for the design stage and then a breadboard "fabrication" for the experimental phase. All except the Base Paper design will have a report of one or two pages to summarize the work done. The Base Paper design will have a formal written report along with oral reporting.  
For those interested, VLSI fabrication is possible via MOSIS (actual fabrication will require a commitment to make measurements on the chip, for which the Microelectronics Design Laboratory, will be made available).  
Use of Spice (and/or PSpice or a similar circuit analysis program) is required. The professional version will be on the ENEE 417 Laboratory computers via the server. Copies of various evaluation versions of PSpice are available for student download (ftp of 6.2 disks from [http://www.ee.umd.edu/newcomb/spice\\_dl.htm](http://www.ee.umd.edu/newcomb/spice_dl.htm); latest on CD from Cadence on www via <http://www.pspice.com/downloads/evalrequest.asp>); some are on the PCs of the Jasmine Lab as well as Room EGR 0123 and Spice is on the UNIX workstations of the EE Department Computer Laboratories (Rm AVW 1442, 1454).
10. Grading: Base Paper Design and report, about 60%, with the other designs amounting to the remainder, about 40%, of the grade.