

ENEE 417 - Spring 2003 Course Description

1. Course: ENEE 417 Microelectronics Design Laboratory (2 credits)
2. Place & Time: Lecture: Room EGR 2112; M 14:00-14:50  
Labs: Room AVW 1330; Section 1: M 08:00-10:50, Section 2: T 13:00-15:50,  
Section 4: W 16:00-18:50, Section 5: Tu 16:00-18:50
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:  
email address: newcomb@eng.umd.edu; URL: <http://www.ee.umd.edu/newcomb/mslab.html>
4. Teaching Assistants: Sections 1 RWN, email: newcomb@eng.umd.edu  
Section 2: Soumanjov Das, email: sdas@Glue.umd.edu  
Section 4 Wanli liu, email: wanli@Glue.umd.edu  
Section 5: Eric L.Tan, email: eltan@Glue.umd.edu
5. Prerequisite: ENEE 302-312 or consent of instructor  
Textbook: K. L. Ashley, "Analog Electronics with Labview," Prentice Hall PTR, Upper Saddle River, NJ, 2003. Papers from literature;  
Recommended text: "J. O. Attia, "PSPICE and Matlab" CRC Press, 2002  
Recommended Programs: Spice (on the SUNS); evaluation versions of PSpice for PCs; Student Version of MATH CAD and/or MATLAB; MAGIC (for VLSI layout)
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.ee.umd.edu/newcomb/courses/spring2003/417/ENEE417\\_spring2003.html](http://www.ee.umd.edu/newcomb/courses/spring2003/417/ENEE417_spring2003.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 automated testing of designed circuits. 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. There will be some use of VLSI layout and some use of automated testing.
9. Course Operation: Lectures are scheduled for once per week and on the common types of experiments will cover background needed 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 page to summarize the design. The Base Paper design will have a formal written report along with oral reporting; automated test results and VLSI layouts for the Base Circuit should be included.  
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). There are available a couple of formerly fabricated chips upon which measurements can also be made  
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). LabView will also be used extensively as well as MAGIC for VLSI layout
10. Grading: Base Paper design, about 60%, with the other designs amounting to the remainder, about 40%, of the grade.