ENEE 417 – Spring 2017   Course Description

1.   Course: ENEE 417 Microelectronics Design Laboratory (2 credits)
2.   Place & Time: Lecture: Room ~~EGR 2154~~ ;changed to AVW 1334 Tu 2:00-2:50
     Labs: Room AVW 1334; Section 1: M 2:00-5:00 pm, Section 2: W 2:00 – 5:00pm
3.   Instructor: R. W. Newcomb, email: newcomb@eng.umd.edu
          Office: AVW-1347; MSLab: AVW-1349
          Phones: Office: (301) 405-3662
               Home: (301) 622-0177 (before 9:30pm)
          Office Hours: Tu 4:15-4:45pm
4.   Teaching Assistant: Monday section, Keerthi Kalyanam email: kvishal@terpmail.umd.edu
5.   Prerequisite: ENEE 303-307 or consent of instructor
     Recommended Textbook: R. H. King, "Introduction to Data Acquisition with LabVIEW," McGraw-Hill, Boston, 2009, with CD (ISBN: 978-0-07-338584-6). [Alternative: R. H. Bishop, "LabVIEW 2009, Student Edition" Prentice Hall, Upper Saddle River, NJ, {2010, (ISBN: 0-13-978-0-13-214129-1)] and papers from the literature. Recommended Programs: Spice (on the VPN); evaluation versions of PSpice for PCs; MAGIC (if available) (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/spring2017/417/ENEE417_spring2017.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 will be on the Time Schedule for the course, updated as we proceed. Some of the designs are of a common type but there will be a multi-period 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 as needed to make the designs for the common types of experiments. 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 or on CD from Cadence 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 workstations of the EE Department Computer Laboratories (Rm AVW 1442, 1454). Heavy use will be made of LabView for automated testing with the program and its tutorials on the 417 laboratory computers.
10. Grading: Base Paper Design and report, about 60%, with the other designs amounting to the remainder, about 40%, of the grade.
11. Probably will be no final.