EECT 6326 - Analog Integrated Circuit Design

Prerequisite:
EE4340/EECT5340Analog Integrated Circuit Analysis and Design
(Knowledge of MOSFET and BJT device models, single-stage amplifiers, differential amplifiers, simple current mirrors, and feedback theory)

Instructor: Dr. Jin Liu, ECSN 4.506, (972) 883-4393, jinliu@utdallas.edu, www.utdallas.edu/~jinliu

Lecture: Fridays, 1pm – 3:45pm, ECSS 2.305

Office Hours: By appointment

Textbooks:
Design of Analog CMOS Integrated Circuits, by Behzad Razavi, McGraw-Hill, 2001. ISBN: 0-07-238032-2.

Analysis and Design of Analog Integrated Circuit, Paul R. Gray, Paul J. Hurst, Stephen H. Lewis, and Robert G. Meyer, John Wiley & Sons, Inc., 4th edition, 2000. ISBN: 0-471-32168-0.

CMOS Analog Circuit Design, Phillip E. Allen and Douglas R. Holberg, Oxford University Press, 2nd edition, 2002. ISBN: 0-19-511644-5

Operational Amplifiers – Theory and Design, Johan H. Huijsing, Kluwer. ISBN: 0792372840

Analog Design for CMOS VLSI Systems, Franco Maloberti, Kluwer Academic Publishers, 2001. ISBN: 0-7923-7550-5.

Objective: To introduce the principles of analog integrated circuit design and to provide the circuit level analog IC design knowledge required in the analog IC design industry and research.

Course Grading Policy: The final grade will be determined using the following scheme:
Homework x 30% + Project x 20% + Final Exam x 50%.

Final Exam: The exam is closed book with two pages of notes on letter sized paper allowed.

Homework and Project: Homework will be assigned on a bi-weekly basis and be collected at the beginning of the class on the due date. *No late homework*. The homework solution will be posted on the professor's webpage, with password protection. Some of the homework and the project require the use of cadence/analog artist design tools; tutorial will be given at the beginning of the semester. In order to use Cadence tools at UTD, a UTD UNIX account is required. It is OK to use Cadence tools at students' workplace if preferred.

Attendance: Students are responsible for all course materials, announcements, and notes, etc. made during our regular class meeting time.

Academic Honesty: It is the responsibility of the instructor to encourage an environment where students can learn and their accomplishments will be rewarded fairly. Any behavior that compromises the University's rules of academic honesty will be reported to the Dean of Students. The penalty of academic dishonesty ranges from receiving F grade in this class to being expelled from the university.

Library Reserve: The required textbook and the recommended books are on reserve at the library, with check out time of two hours.

Coverage of Topics:

Topics	***Gray***	***Razavi***
MOSFET Device Models	Ch. 1	Ch. 2 & 16
BJT Device Models	Ch. 1	
IC Technology	Ch. 2	Ch. 17
Single-Stage Amplifier	Ch. 3	Ch. 3
Differential Amplifiers	Ch. 3	Ch. 4
Current Mirrors	Ch. 4	Ch. 5
References	Ch. 4	Ch. 11
Opamp Design	Ch. 6	Ch. 9
Frequency Response	Ch. 7	Ch. 6
Stability and Compensation	Ch. 9	Ch. 10
Noise	Ch. 11	Ch. 7
Fully Differential Amplifiers	Ch. 12	Ch. 9
Cadence Tutorial	Handout	Handout