EE 3050A – Analog Electronics, Spring 2003

COURSE DETAILS

Instructor: Dr. Phillip E. Allen, Room 292B, Van Leer, 404-894-6251 (office)

Class Meeting Times and Location: Monday, Wednesday, and Friday, 11:05am to 11:55am, Room C341, Van Leer

Office Hours: 2-3pm MW and 1-2pm F or by e-mail <pallen@ece.gatech.edu>.

Prerequisite: ECE 3040

Text: *Microelectronic Circuit Design*, Richard C. Jaeger, McGraw-Hill, 1997, ISBN 0-07-032482-4.

Electronic Copies of Class Handouts: You may download pdf copies of all classroom material at the following web site: http://users.ece.gatech.edu/~pallen/Academic/

Objectives: To present concepts of analysis and design of electronic circuits and systems. Biasing, small-signal analysis, frequency response, feedback amplifiers, active filters, non-linear op-amp applications, and oscillators.

Examinations and Quizzes:

There will be 13, 25-minute weekly quizzes given during the first 25 minutes of every Friday's class (9:05am-9:30am) and a 3-hour final examination. ***The first quiz is scheduled for Friday, January 17, 2003.*** Both the quizzes and the final are closed book. The final examination will be on Monday, April 28, 2003 at 2:50pm to 5:40pm.

Normally, no make-up quizzes will be given since three quizzes can be missed without penalty (see course grading policy). All quiz grades become final one week after they are returned in class.

Homework:

Homework will be assigned on a weekly basis and graded.

Course Grading Policy:

Your grade will be determined using the following weighting scheme based on a curve and will not necessarily be consistent with 100≥A>90, 90>B>80, etc..

10 highest of the 13 weekly quizzes	50%
Final examination	30%
Homework	20%

Attendance: You are responsible for all course materials, announcements, notes, etc. made during the regular class meeting times. Prompt arrival to class is requested.

Classroom Behavior: Smoking, drinking, and eating are prohibited in the classroom.

Course Lecture Notes: Lecture notes will be delivered using the overhead projector. Copies of these lecture transparencies will be available shortly after class.

References for further study:

1. R. Howe & C. Sodini, *Microelectronics-An Integrated Approach*, Prentice Hall, 1997.
2. M.N. Horenstein, *Microelectronic Circuits and Devices*, 2nd Ed., Prentice Hall, 1996.
3. *Microelectronic Circuits*, 4th Ed., A. Sedra & K. Smith, Oxford Univ. Press, 1998.
4. M. Rashid, *Microelectronic Circuits - Analysis and Design*, PWS Publish. Co. 1999.

Weekly Coverage of Topics for ECE3050

Week	Date	Topic	Reading (Text)
1	1/6-1/10	Introduction, review of large and small signal models of diodes, BJTs, MOSFETs, and JFETs	Chapters 3, 4 and 5
2	1/13-1/17*	Analog systems: gains, two-port networks, Bode plots, filters	11.1-11.6
3	1/20	Holiday	
3	1/21-1/24	Operational amplifiers: inverting & noninverting, differential amplifiers, active filters.	12.1-12.4,12.6
4	1/27-1/31*	Single-stage amplifiers: dc bias, ac gains, impedance levels, graphical analysis, modeling, CE configuration.	13.1-13.6
5	2/3-2/7*	FET amplifiers, CS amplifiers, impedance levels	13.7-13.12
6	2/10-2/14*	Single-stage amplifier configurations: CB, CC, CG and CD configurations	14.1-14.4
7	2/17-2/21*	Amplifier design examples	14.5-14.7
8	2/24-2/28*	Multistage amplifiers: dc and aac coupled amplifiers, differential amplifiers, CMRR.	15.1-15.3
	3/3-3/7	Spring Break	
9	3/10-3/14*	Frequency response, low and high frequency analysis techniques	17.1-17.6
10	3/17-3/21*	Miller's theorem, open-circuit time constant analysis method for multistage amplifiers	17.7-17.9
11	3/24-3/28*	Feedback: concepts, topologies, circuits, analysis techniques	18.1-18.2
12	3/31-4/4*	Feedback amplifiers: voltage, current, transconductance, transresistance	18.3-18.8
13	4/7-4/11*	Sinusoidal oscillators, stability concepts	18.9-18.12
14	4/14-4/18*	Wein bridge and phase shift oscillators Nonlinear op amp applications	18.13-18.14 12.12
15	4/21-4/25*	Waveshaping circuits, precision rectifiers, peak detectors, waveform generators, Schmitt trigger circuit	12.12-12.13
16	4/28	Final exam, Monday 2:50-5:40pm	

* Class days where a 25 minute quiz will be given.