

Syllabus and Schedule for EE 3050A – Analog Electronics, Spring 2004

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

Class Meeting Times and Location: Monday, Wednesday, and Friday, 10:05am to 10:55am, Room C341, Van Leer

Office Hours: Allen - 2-3pm MW and 3-4pm F or by e-mail <pallen@ece.gatech.edu>. Shakeel Qureshi – TBD, <shakeel@ece.gatech.edu>

Prerequisite: ECE 3040

Text: *Microelectronic Circuit Design*, Richard C. Jaeger and Travis Blalock - 2nd Edition, McGraw-Hill, 2004, ISBN 0-07-232099-0.

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/> Previous ECE 3050 material taught by your instructor is also available at this web site.

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 16, 2004.*** Both the quizzes and the final are closed book. The final examination will be on Monday, April 26, 2004 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 are not subject to change 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 $100 \geq A > 90$, $90 > B > 80$, 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	1/5-1/9	Introduction, review of large and small signal models of diodes, BJTs, MOSFETs, and JFETs	Chapters 3, 4 and 5
2	1/12-1/16*	Analog systems: gains, two-port networks, Bode plots, filters	10.1-10.7
3	1/19	Holiday	
3	1/21-1/23	Operational amplifiers: inverting & noninverting, differential amplifiers, active filters.	11.1-11.3, 11.5
4	1/26-1/30*	Single-stage amplifiers: dc bias, ac gains, impedance levels, graphical analysis, modeling, CE configuration.	13.1-13.6
5	2/2-2/6*	FET amplifiers, CS amplifiers, impedance levels	13.7-13.12
6	2/9-2/13*	Single-stage amplifier configurations: CB, CC, CG and CD configurations	14.1-14.4
7	2/16-2/20*	Amplifier design examples	14.5-14.7
8	2/23-2/27*	Multistage amplifiers: dc and ac coupled amplifiers, differential amplifiers, CMRR.	15.1-15.3
9	3/1-3/5*	Frequency response, low and high frequency analysis techniques	17.1-17.6
	3/8-3/12	Spring Break	
10	3/15-3/19*	Miller's theorem, open-circuit time constant analysis method for multistage amplifiers	17.7-17.9
11	3/22-3/26*	Feedback: concepts, topologies, circuits, analysis techniques	18.1-18.3
12	3/29-4/2*	Feedback amplifiers: voltage, current, transconductance, transresistance	18.3-18.6
13	4/5-4/9*	Feedback concepts in more detail, stability concepts	18.7-18.11
14	4/12-4/16*	Wien bridge and phase shift oscillators Nonlinear op amp applications	18.12 12.5
15	4/19-4/23*	Waveshaping circuits, precision rectifiers, peak detectors, waveform generators, Schmitt trigger circuit	12.5-12.6
16	4/26	Final exam, Monday 2:50-5:40pm	

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