

ELEN 457
OPERATIONAL AMPLIFIERS AND APPLICATIONS

• An Aggie does not lie, cheat, or steal or tolerate those who do. Honor Council Rules and Procedures: <http://www.tamu.edu/aggiehonor>

Spring 2006 ((MWF 15:00-15:50))

Instructor: **Kamran Entesari (kentesar@ece.tamu.edu)**

Office: WERC 318-A, Office Hours: 1:00- 2:00 p.m. MW

Text: S. Franco, “*Design with Operational Amplifiers and Analog Integrated Circuits*,” New York, McGraw-Hill (3rd Edition) 2001

References: E.J. Kennedy, “*Operational Amplifier Circuits Theory and Applications*,” Holt, Rienhart and Winston, Inc. 1988.

K. L. Ashley, “*Analog Electronics with LabVIEW*”, Prentice Hall PTR, 2003.

Description

Operational amplifiers (Op Amps) and operational transducer amplifiers (OTAs) are basic building blocks of a variety of integrated circuits. This course emphasizes on basic concepts regarding Op Amps and OTAs and their applications in practical circuits. The topics covered in this course help students to develop Op Amp circuit design expertise through approximate and effective circuit analysis and through more precise circuit simulations.

The course includes six laboratories to improve students’ practical skills. It also consists of a final project which can be either (a) design, simulation and realization of a small system, or (b) special hardware projects chosen by students including the theoretical aspects and the justification of the design, experimental vs. theoretical results and a prototype with a printed circuit board. There would be a final presentation for each project at the end of the class.

Grading Policy

- 1) 6 Laboratories 25%
- 2) Two Midterm Exams 30%
- 3) Final Exam 10%
- 4) Final Project 15%
- 5) Homework Assignments 15%
- 6) Weekly Quizzes 5%

Prerequisite

ELEN 326: Electronic Circuits

Course Schedule

Date	Topic	Activity	Chapter
Jan. 18	Op Amp fundamentals and ideal macro model	-	1, 2
Jan. 27	Non-ideal properties and macro models	Lab 0 (Jan. 24)	5,6
Feb. 6	Stability and Noise analysis in Op Amp circuits	Lab 1 (Jan. 31)	7,8
Feb. 13	OTA fundamental properties	Lab 2 (Feb. 7)	Notes
Feb. 20	Active filters	Lab 3 (Feb. 14) Exam 1 (Feb. 20)	3,4
March 20	Multipliers and nonlinear applications	Lab 4 (Feb. 21) Lab 5 (Feb. 28)	9,13
March 27	Signal generators	Lab 6.a (March 21)	10
April 3	Oscillators	Lab 6.b (March 28)	Notes
April 12	Switched capacitor techniques	Lab 6.c (April 4) Exam 2 (April 12)	Notes
April 19	D/A and A/D converters	Lab 7 (April 11)	12
April 26	Phase-locked loops	Project Presentation	13