

ELEC 5780/6780, Section 001, Spring 2008
Broun Hall 0235, Tuesday and Thursday 3:30~4:45pm

ANALOG CIRCUIT DESIGN

Catalog Data: ELEC 5780/6780. ANALOG CIRCUIT DESIGN (3) LEC. 3. Pr., ELEC 3700 or departmental approval. Circuit design techniques used for implementing analog integrated circuits in both CMOS and bipolar technologies.

Course Objectives: 1. To understand MOS/Bipolar analog integrated circuit designs.
2. To gain hands-on analog IC design experience using industrial popular Cadence Analog Artist CAD tool.

Textbook: R. C. Jaeger and T. N. Blalock, *Microelectronic Circuit Design*, McGraw-Hill, 3rd Edition, 2007.

References: P. R. Gray and R. G. Meyer, *Analysis and Design of Analog Integrated Circuits*, Fourth Edition, John Wiley & Sons, 2001.
A. B. Grebene, *Bipolar and MOS Analog Integrated Circuit Design*, John Wiley & Sons, 1984.

Instructor: Foster Dai, 404 Broun Hall, 334-844-1863, daifa01@auburn.edu
Office Hour: TU/TH 5:00pm ~ 6:00pm

Topics:

- Bipolar and MOS Transistors in Integrated Circuits
- Passive Components in Integrated Circuits
- Analog IC Designs Using Cadence Analog Artist
- Bias and Reference Circuits
- Current Mirrors
- Basic Amplifiers and Differential Pairs
- Operational Amplifiers
- Low Noise Amplifiers
- Wide Band Amplifiers
- Output Buffers and Power Amplifiers
- Analog Mixers and Multipliers
- Voltage Controlled Oscillators

Grading: (*Different requirements applied to senior and graduate levels*)

- Homework (10%)
- Project (20%), Selected Analog Design Using Cadence Analog IC Design Tool
- Midterm Exam (30%)
- Final Exam (40%)

Primary program outcomes related to this course:

Outcome 1. Ability to apply knowledge of math, science and engineering to solve problems.

Outcome 2. Ability to apply in-depth knowledge in one or more disciplines.

Outcome 3. Ability to design an electrical component or system to meet desired needs.

Outcome 6. Proficiency in the use of computers and other modern tools to solve engineering problems.

Outcome 8. Proficiency in communicating ideas and information orally and in writing.

Outcome 9. Appreciation of the need for, and an ability to learn new concepts as required for the continuing practice of ECE.

Course information located at AU WebCT site. Prepared by: Foster Dai, Date: Jan 7, 2008.