

ELEG 4243 – ANALOG INTEGRATED CIRCUITS

Credits and Contact Hours

Three credit hours, 45 hours of instructor contact

Instructor's Name

Simon S. Ang, PhD, PE, Professor of Electrical Engineering

Textbook

“CMOS Analog Circuit Design” 3rd Edition, Phillip E. Allen & Douglas R. Holberg, Oxford University Press, 2012

Specific Course Information

- a. Catalog description
~~Theory and design techniques for linear and analog integrated circuits: CMOS models, CMOS analog sub-circuits, CMOS amplifiers design techniques, CMOS operational amplifiers, CMOS integrated circuit simulation using Spice, and other topics as time permits.~~
Theory and design techniques for linear and analog integrated circuits. Current mirrors, voltage to base emitter matching, active loads, compensation, level shifting, amplifier design techniques, circuit simulation using computer-assisted design programs.
- b. Pre-requisites or co-requisites: ELEG 322~~4~~3
- c. Required or Technical Elective: None

Specific Goals for the Course

1. Specific outcomes of instructions

This course is designed to introduce students to the basic principle of CMOS analog integrated circuits analysis and design.

2. Indicate the student outcomes listed in Criterion 3 addressed by the course

- (a) Students are required to apply mathematics in analyzing CMOS analog circuit performance.
- (c) Students are required to design CMOS analog circuits to meet performance specifications.
- (e) Students are required to solve engineering problems related to CMOS analog circuits.
- (l) Students are required to apply mathematics through differential equations in analyzing and designing CMOS analog circuits.

List of Topics

1. CMOS Models (2 classes)
2. CMOS Analog Sub-circuits (8 classes)
3. CMOS Amplifiers (12 classes)
4. CMOS Operational Amplifiers (12 classes)
5. High Performance CMOS OP-Amps (6 classes)
5. Other Short Topics (2 classes)