

EEE5364 - Fund Data Converters

EEL 5934: Fundamentals of Data Converters

Nima Maghari

Course Description

This course explores fundamentals of data converter systems and circuits. Most of the commonly used ADC and DAC architectures such as flash, two-step, pipelined, algorithmic, successive-approximation, R-2R DACs and other widely used structures are discussed in great details. The effects of circuit non-idealities are analyzed and various system and circuit techniques will be discussed to enhance the performance of these converters. Circuit design techniques, layout issues and other practical limitations of analog IC design will be also discussed in this course.

The course objective is to provide a thorough background of data converter systems and circuits, discuss the real world applications, IC design challenges and prepares students for other areas of analog and digital IC design.

Video Links (DropBox):

<https://www.dropbox.com/sh/jrdlh7z0ccosem/AACOpd6SKCsZn-yrjHpArxQa?dl=0>

Class Schedule: This Class is offered Remotely (Online and offline setting). More will be discussed.

M,W,F | Period 6

(12:50 PM - 1:40 PM)

Office hours: by prior contact

Location: CHE 0316

Meeting info:

TBD

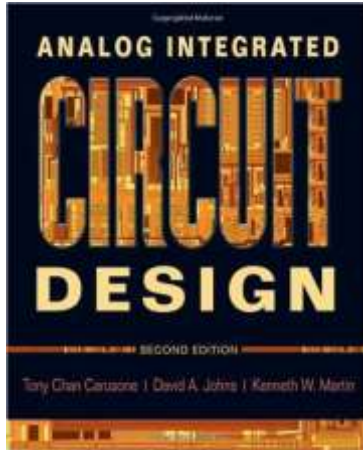
Pre-requisite:

EEE 5320 Analog IC Design I

or equivalent knowledge of this topic (see the instructor)

Textbooks(not required)

Analog Integrated Circuit Design (2nd edition) (highly recommended)



By Tony Chan Carusone, David Johns and Kenneth Martin

Publisher: Wiley; 2 edition (December 13, 2011)

· **ISBN-10:** 0470770104

· **ISBN-13:** 978-0470770108

Hardcover: 816 pages

Software

Matlab R8 and above

Cadence (if you do not know Cadence, please contact me ASAP)

What you should know

Analog IC Design (Opamps, frequency response, settling, slew rate ...)

Basic Probability and stochastic signals (WSS, Gaussian, PDF, PSD ..)

Frequency Response (bode plot, pole-zero)

Analog Layout Basics (LVS/DRC)

Exams:

TBA

Grading basis

Homework 20% (5-6 series)

Mini Projects 25%

Midterms 25%

Project 35% (total 105%, 5% extra)