Analog IC Design using Free Software Tools

From 2nd Oct till 6th Oct 2020

Overview:

The curriculum for workshop consists of understanding CMOS process from the perspective of analog IC design, realizing device-level circuits from specifications and implementing the design using LTspice and MAGIC softwares.

Modules:

The course is divided into the following modules.

Day1:

Introduction, modern CMOS process cross-section, devices available in CMOS. Resistor: layout, types and comparison, mismatch and process variation. LTspice software installation and getting started. Hands-on exercise using LTspice.

Day2:

Capacitor: layout; MIM, MOM, MOS caps. Capacitor: Mismatch and process variation, MOSFET: layout and model. MOS characterization using LTspice. MOS characterization using LTspice.

Day3:

MOS amplifier: CS, CG, CD amplifiers. MOS amplifier: Body effect, signal coupling and biasing. Mismatch simulation using LTspice. CS amplifier design for given spec in LTspice.

Day4:

Noise and mismatch effects in electronics circuits. Opamp design: Single-stage opamp, frequency response, slew-rate, noise, offset. Noise simulation in LTspice. Single-stage opamp design in LTspice.

Day5:

Opamp design: Two-stage opamp, frequency compensation, slew rate. Opamp datasheet, device biasing and sizing considerations. Introduction to Magic layout software and getting started. Layout design in Magic and post-layout simulation in LTspice.

You Should Attend If....

This course is designed for Engineers, Faculty and Students. For the Engineers, and Faculty from Electrical, and Electronics engineering, it is a refresher course. For PG students it will help in their research projects. For BTech it will be an advanced course to encourage them check out research avenues.

Fees:

For TEQIP Participants its free of cost.

About Speakers:

Dr. Abhishek Kumar received the M.E. degree in microelectronics from the Indian Institute of Science Bangalore, India, in 2011, and the Ph.D. degree from IIT Madras, India, in 2018. He completed a five-month internship at Qualcomm India Pvt., Ltd., Bengaluru, in 2014, where he designed VCO for cellular transceiver IC. He is currently an Assistant Professor with IIT Hyderabad, India. His research interest includes radio frequency circuit design.

Course Co-ordinator

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