THE OHIO STATE UNIVERSITY
COLLEGE OF ENGINEERING

Advanced Topics in Analog VLSI Design

ECE 7027

Credit Hours:
4.00 - 4.00

Course Levels:
Graduate (5000-8000 level)

Course Components:
Lecture
Lab

Course Description:
Advanced topics in analog VLSI design, such as integrated data converters, or power management integrated circuits, or high-performance analog circuits. This includes: system and circuit architectures, performance metrics, practical implementations, design considerations in advanced semiconductor processes, chip design projects, and lab characterization.

Prerequisites and Co-requisites:
Prereq: Permission of instructor.

Course Goals / Objectives:
- Learn various advanced topics in analog VLSI design including data converters, or power management circuits, or high-performance analog circuits.
- Learn analog integrated circuits specifications and performance metrics and advanced design techniques and performance tradeoffs.
- Learn the latest industrial trends and challenges pertaining to integration and semiconductor technologies.
- Apply the acquired theoretical knowledge to perform a class design project using IC PDKs and simulation and design tools.
- Learn how to perform lab characterization of various analog integrated circuits.

Course Topics:
- Basic definitions, main tasks of analog systems such as data converters, or power management circuits, or high-performance analog circuits and challenges facing their implementation in VLSI applications.
- Performance metrics, limitations, and tradeoffs.
- System and circuit architectures and models.
- Practical design considerations.
- Implementation examples and product data sheets.
- Introduction to lab characterization of analog integrated circuits.
- Lab characterization of various analog integrated circuits, including data converters, or power converters, or high-performance circuits.

Designation:

Elective