CDA 4210 Introduction to VLSI Design

Credits: 3


Specific course information
- Catalog description: Exposes students to digital VLSI design and simulation tools with simple examples. Use of commercial state-of-the-art industrial CAD/CAE tools.
- Prerequisites: CDA 3201C, EEE 330 or permission of instructor
- Required, elective, or selected elective: selected elective

Specific goals for the course
- Specific outcomes of instruction: By the end of the course students will: (i) develop an understanding of digital VLSI systems, which include device types, 3-D models, CMOS Technology; (ii) Design rules and diagrams; (iii) Understand Fabrication processes and techniques, and Layout Design and Analysis; (iv) Understand other VLSI design technologies will be discussed such as NMOS, Dynamic CMOS and transfer gate among others. Students will have a number of hands-on experiments and design assignments.

Brief list of topics to be covered:
- Semiconductor Physics, P-Type, N-Type devices, Reverse Bias, Forward Bias.
- MOS Transistors characteristics, 3-D Models, and Regions of Operation.
- CMOS Technology, Static CMOS Circuits.
- Design Rules, Stick Diagram, and Complex Static CMOS Circuits.
- Dynamic CMOS Circuits Design.
- Fabrication Processes and Techniques.
- N-MOS Technology, Technologies Comparison.
- LAYOUT Design and Analysis.