EE 302 Digital Integrated Circuits
Spring 2020-2021

Instructor: Ayhan Bozkurt, Room: FENS-1047, ext. 9537, e-mail: abozkurt@sabanciuniv.edu.

Catalog Data: EE 302 Digital Integrated Circuits (3 cr.) Prerequisites: EE 202

Overview of metal-oxide semiconductor (MOS) device technologies for large scale integrated (LSI) circuits; inverter circuits, static and transient operation; complementary metal-oxide semiconductor (CMOS) logic implementation, full-custom gate design, mask layout fundamentals; static and dynamic logic circuits; sequential logic circuit designs; non-volatile semiconductor memory structures; static and dynamic random access memory design principles.

Textbook:
- S. Kang, Y. Leblebici *CMOS Digital Integrated Circuits, 3th Ed.*, McGRAW-HILL, 2003.

Other Relevant Material:
- Cadence tutorial at http://acoustics.sabanciuniv.edu/cds/

Computer Usage: Cadence Software under CentOS Linux.

Goals: To develop the engineering skills of the students to analyze and design CMOS Digital ICs.

Course Outline:
1. Introduction to Digital IC Fundamentals (1 weeks)
2. Static and Dynamic Operation of CMOS Inverters (2 weeks)
3. Static CMOS Logic Gates (2 weeks)
4. Sequential Logic Gates (2 weeks)
5. Dynamic Logic (2 weeks)
6. Memory Cells/Arrays (3 weeks)
7. Power Management (1 week)

QUIZZES: Every other week (starting the 2nd), during class hours on Wednesday.

Grading Policy: Cheating and late submissions are severely penalized.

Grading: Quizzes 50%; Lab work 35%; HWs 5%; Final 10%.