



EE 431
DIGITAL INTEGRATED
CIRCUITS

Dr. Mohammed M. Farag



Faculty of Engineering
Alexandria University



Course Staff

□ Instructor:

- Dr. Mohammed Morsy (mmorsy@ieee.org)
 - 4th Floor ECE Building

□ TAs:

- Eng. Mohamed Megahed

□ Office hours:

- Saturday: 10:30-12:00PM



Basic Info.

□ Textbook

- “CMOS Digital Integrated Circuits Analysis and Design 3rd Edition”, Sung Mu-Kang, Yusuf Leblebici

□ Supplementary References

- “Digital Integrated Circuit Design”, Ken Martin
- “CMOS Logic Circuit Design”, John Uyemura

□ Prerequisites

- Logic design, Circuit analysis, Basic semiconductor devices

□ CAD Tools

- Spice
- Tanner L-edit



Course Outline

- Introduction, Fabrication, and Layout
- MOSFET Device Structure and Operation
- CMOS Inverters: Static and Dynamic Characteristics
- CMOS Combinational Circuits
- CMOS Sequential Circuits
- Dynamic Logic Circuits
- Semiconductor Memories and Array Circuits



Course Work and Grading

- 5 Labs: Use L-edit and Spice to layout, model, and simulate different CMOS digital ICs taught in the course
 - 12%
- Project: Layout and schematic design
 - 8%
- Midterm exam
 - 20%
- Final Exam
 - 60%



Course Webpage

- All course materials and lecture slides will be published to the following webpage:

http://eng.staff.alexu.edu.eg/~mmorsy/Courses/Undergraduate/EE431_Digital_Integrated_Circuits/EE431.html

Backup page:

http://mmorsy.byethost10.com/Courses/Undergraduate/EE431_Digital_Integrated_Circuits/EE431.html

- Announcements and course updates will be announced on the course webpage