Fall 2015 ECEN 454/714 Digital Integrated Circuit Design
Department of Electrical and Computer Engineering
Texas A&M University

Instructor
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Lectures
Sections ECEN 454/501-505: MW: 8:00am – 8:50am 1034 ETB
Sections ECEN 454/506-510: MW: 3:00pm – 3:50pm 113 HELD
Sections ECEN 714/601-605: MW: 8:00am – 8:50am 1034 ETB
Sections ECEN 714/606-610: MW: 3:00pm – 3:50pm 113 HELD
Class website: http://dropzone.tamu.edu/~pli/454-714-Fall15/

Labs
Section 454-501: F 08:00AM – 09:50AM 324 CVLB
Section 454-502: W 03:00PM – 04:50PM 324 CVLB
Section 454-503: F 11:30AM – 01:20PM 324 CVLB
Section 454-504: M 03:00PM – 04:50PM 324 CVLB
Section 454-505: T 10:40AM – 12:30PM 324 CVLB
Section 454-506: R 08:00AM – 09:50AM 324 CVLB
Section 454-507: M 08:00AM – 09:50AM 324 CVLB
Section 454-508: W 03:00PM – 04:50PM 324 CVLB
Section 454-509: T 03:35PM – 05:25PM 324 CVLB
Section 454-510: R 10:00AM – 11:50AM 324 CVLB
Section 714-601: F 08:00AM – 09:50AM 324 CVLB
Section 714-602: W 03:00PM – 04:50PM 324 CVLB
Section 714-603: F 11:30AM – 01:20PM 324 CVLB
Section 714-604: M 03:00PM – 04:50PM 324 CVLB
Section 714-605: T 10:40AM – 12:30PM 324 CVLB
Section 714-606: R 08:00AM – 09:50AM 324 CVLB
Section 714-607: M 08:00AM – 09:50AM 324 CVLB
Section 714-608: W 03:00PM – 04:50PM 324 CVLB
Section 714-609: T 03:35PM – 05:25PM 324 CVLB
Section 714-610: R 10:00AM – 11:50AM 324 CVLB
Lab webpage: ecen454: http://ece.tamu.edu/~ahn686/ecn454.html
ecn714: http://ece.tamu.edu/~ahn686/ecn714.html

Text
David Harris, Addison Wesley, 2009.

References (not required)
McGraw Hill.

Prerequisites
ELEN248 (Introduction to Digital Systems Design) or equivalents
Course Overview
This course provides a comprehensive introduction to various aspects of modern digital integrated circuit design, including IC fabrication processes, MOS transistor device characteristics, schematic and layout design, combinational and sequential logic, interconnect, memories, timing, and clock distribution. Various logic families and design styles are introduced. In lab sessions, students will gain hands-on design experience though the use of the state-of-art commercial design tools.

Lecture Agenda (tentative)
1. Introduction
2. CMOS circuit overview
3. Fabrication and layout
4. MOS transistor IV characteristics and parasitics
5. DC and transient characteristics
6. Delay and power Estimation
7. Logic effort and gate sizing
8. Interconnect
9. SPICE simulation
10. Combinational circuits
11. Sequential circuits
12. Clock distribution
13. Semiconductor memories
14. Package, Power, I/O

Grading
Homework 10%
Mid-term 17% (50mins – 1 hour, TBA, likely to be on an evening)
Final Exam 33% (2 hours, TBA, likely to be on an evening)
Lab 40%

Late homework/lab submissions (counting weekends and breaks):
Homework: 50% penalty/day Labs: 20% penalty/day

Check the class and lab web pages for important homework and lab grading policies.

Americans with Disabilities Act (ADA)
The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact Disability Services, in Cain Hall, Room B118, or call 845-1637. For additional information visit http://disability.tamu.edu

Academic Integrity
For additional information please visit: http://aggiehonor.tamu.edu

"An Aggie does not lie, cheat, or steal, or tolerate those who do."

Logistics
Check the class website.