VLSI System Design  
(Graduate Level)

Course Description

The next-generation electronic system will have billions of transistors on a chip. To design such a complex system, designers need to understand system design issues to cope with this daunting task. This course introduces fundamental design concepts that are used to facilitate design and analysis of billion-transistor systems. The course emphasizes the balance between theory and hand-on practices. Upon completion of this course, you shall have adequate background for designing a moderate-size system. In this course, you will learn 1) VLSI system design flow; 2) major EDA tools; 3) writing moderate-size hardware description language; 4) digital processor design techniques. The course is outlined as follows:

- VLSI System Design Methodology
- Digital Design with Verilog
- Synthesis of Digital Logic
- Design of Digital Processors

Pre-requisite Courses:

- Digital logic or equivalent course (must)
- Computer Organization (must)
- Self-motivation in learning CAD tools and Verilog HDL

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Course Website: http://moodle.ncku.edu.tw

Required Reading Materials:

Lecture Notes: available on course website
References:


EDA tools:

- Cadence Verilog-XL
- Synopsys Design Vision, Debussy, Cadence SoC Encounter/IC Compiler

Exams and Projects:

Midterm exam: Thursday, November 05, 2009
Project proposal: Thursday, October 22, 2009
Project Demo: Thursday, January 21, 2010

- Exams could be closed-book or open-book. NO calculator is allowed.
- There will be no make-up exams (in very special circumstances, written excuse and official proofs are required for make-up exams).

Homework Assignments

4 ~ 6 homework assignments will be given for the semester. Due day will be specified in the problem sheet.

NO FOOD AND DRINK IN THE LECTURE HALL
NO late submission will be accepted
To get credit for your homework assignments, your submissions must be done professionally and seriously. Your official name, course number and homework number must be visibly shown in each assignment.
All submission will be done electronically through the course website before the specified time. If you fail to do so, your assignment is considered OVERDUE and gets NO credit. An extra paper copy needs to be delivered in class.

Grading Policy

The tentative weights of the homework assignments and the exams are listed as below and they are subject to minor change.

- Participation 5%
- Homework assignments 30%
- Quizzes and Midterm exam 20%
- Final project report/presentation 45%

Course Policy

- Encourage you to discuss assigned problems with peers
- Must complete his/her assignment independently or as specified
- Any person/team who is found to be dishonesty in homework assignments, examines/quizzes, or the project, the involved person(s) will receive an “0” on the evaluated instrument (paper, exam, project, homework, etc.)

Notes:

- All announcements will be put on the course website from time to time.
- All broadcast emails to you will send through iteach (course website) and only to your email account in NCKU, i.e., nxxxxx@mail.ncku.edu.tw.
- Please send questions to TA via vsd2009@lpvlsi.ee.ncku.edu.tw.
- Any other notes will be described during the class session.