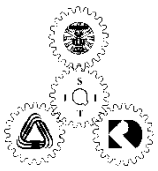

Sirindhorn International Institute of Technology

Thammasat University at Rangsit

School of Information, Computer and Communication Technology

ECS 371: Course Syllabus

Semester/Year: 1/2009

Course Title: Digital Circuits
Instructor: Dr. Prapun Suksompong (prapun@siit.tu.ac.th)
***Course Web Site*:** http://www.siit.tu.ac.th/prapun/ecs371/

Lectures:

CS	IT
Room: BKD3216 Time: • Mon 10:40-12:00 • Thu 09:00-10:20	Room: BKD3215 Time: • Tue 13:00-14:20 • Thu 13:00-14:20

You are STRONGLY encouraged to attend lectures. Class attendance over 70% is mandatory. Students who miss more than 30% of the lectures will **automatically fail** the course.

Student Dress Code:

- Students must wear Thammasat University uniform OR polite dress.
- Plain white shirt, properly tucked in.
- Plain trouser/skirt in dark color.
- The followings are not allowed:
  - Sandals
  - T-shirt (even with the shop shirt)
  - Polo-shirt (even with the shop shirt)

Course Information

Prerequisite: None

Course Description: Number systems and codes. Logic signals and gates. Electronic circuits of logic gates. Logic gate families. Logic gate characteristics. Arithmetic circuits. Combinational logic circuits. Sequential logic circuits. Programmable logic devices. Introduction to A/D and D/A conversions. Introduction to digital integrated circuits.

Required Textbook: Thomas L. Floyd, *Digital Fundamentals*, 10th Edition, Pearson Education International (2009).

References:

- Companion Site of the textbook: http://wps.prenhall.com/chet_floyd_digitalfun_10/
- John Wakerly, *Digital Design Principles and Practices*, 4th Edition, Prentice-Hall (2005).

Grading Policy: Coursework will be weighted as follows:

Homework Assignments	10%
Class Participation and Quizzes	20%
Midterm Examination	30%
Final Examination (comprehensive)	40%

- No late assignments will be accepted.
- Cheating will not be tolerated
- Copying homework/quiz/exam = cheating
    - Punishment:
        - First time cheater receives zero on that assignment
        - Second time cheater receives zero on all quizzes and/or HWs

Quizzes and Exams: All quizzes and exams will be closed book. Calculators are **not** allowed during quizzes, midterm or final exams.

Quizzes will relate to current and previous topics. A quiz may be given at any time during any class period – at the beginning or end of a class, etc. There will be no make-up quizzes. Quizzes will be given only to those students who are present when the quizzes are passed out.

The instructor should be notified before missing any exam if at all possible and immediately thereafter when not possible. The instructor (and/or the fact-finding committee) will determine if the absence from an exam is legitimate. Simply not feeling well is not a reason to miss an exam. In the case of legitimate absence, an oral and/or written make-up exam could be arranged.

Homework: Late submission will not be accepted. You must write down your own solutions in your own words. If you have materials that are taken from published sources, you must clearly and completely cite the source of such materials.

Homework assignments will be graded with attention given to the method and insight rather than the final answers**.** Write down all the steps that you have done to obtain your answers. You won't get full credit even when your answer is correct without showing how you get your answer.

Expectations: You should expect to spend extra 5-8 hours per week studying outside of class. However, I do expect you to come to class and participate actively in class discussions. If you must miss a class, I expect you to find out what happened, either from me or one of your classmates. You are responsible for all materials that are discussed in class.

Academic Integrity

The work you submit in ECS 371 is expected to be the result of your individual effort. You are free to discuss course material, approaches to problems with your colleagues or the instructor but you should never misrepresent someone else's work as your own.

It is your responsibility to protect your work from unauthorized access. For example, do not discard copies of your programs/assignments in public places.

Course Outline

The following is a tentative list of topics.

1. Introduction to digital circuits, number systems, signed numbers, arithmetic operations
2. Logic gates and Boolean algebra (DeMorgan's theorem, truth tables)
    - Here we can have 1+1 = 1.
3. Combinational logic circuits
    a. SOP and POS forms
    b. Karnaugh maps
4. Arithmetic circuits (adders, subtractors, multipliers)
5. MSI logic circuits (encoders, decoders, 7-segment LED, multiplexers, comparators)
6. MIDTERM: 13:30 - 16:30 on Jul 30, 2009
7. Sequential logic circuits
    a. Latches, flip-flop
    b. Analysis and design
    c. Counters, shift registers, digital filters
8. Memory and storage
9. Programmable logic devices (PLD, FPGA)
10. Hardware description language (HDL)
11. Integrated Circuit Technologies
12. FINAL: 13:30 - 16:30 on Oct 1, 2009