Sirindhorn International Institute of Technology

Thammasat University

School of Information, Computer and Communication Technology

ECS 203: Course Syllabus

Semester/Year: 2/2015

Course Title: Basic Electrical Engineering
Instructor: Asst. Prof. Dr.Prapun Suksompong (prapun@siit.tu.ac.th)
Course Website: http://www2.siit.tu.ac.th/prapun/ecs203/

Please check the course web site regularly for updated information about this course.

Lectures:

ECS 203 is taught weekly in two lecture sessions of 80 min each. In addition, there will be one-hour weekly tutorial sessions to review prerequisite skills and reinforce concepts learned in lecture through problem solving.

The meeting time and place are arranged according to the following schedule:

Type	Time		Room
Lecture	Tuesday	13:00-14:20	BKD 2401
Lecture	Friday	10:40-12:00	BKD 3507
Tutorial	Monday	11:00-12:00	BKD 2506

You are STRONGLY encouraged to attend lectures. (See the grading policy below.)

Undergraduate Student Dress Code:
- Undergraduate 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: This course introduces basic electrical engineering principles and technology to students outside the electronics and communication curriculum. Topics include electrical signals, basic circuit theory, DC and AC circuit analysis, Kirchhoff's law, Thevenin/Norton theorems, basic electronic devices and circuits, fundamental of operational amplifiers, fundamentals of power systems, and three-phase circuits.

Textbook: C.K. Alexander and M.N.O. Sadiku, Fundamentals of Electric Circuits, 5th ed., McGraw-Hill, International Edition, 2013. (TK454 A452 2013)

References:

- J. D. Irwin, Basic Engineering Circuit Analysis, John Wiley & Sons, 2002 (TK454 I78 2002).
- J. O'Malley, Schaum's Outline of Theory and Problems of Basic Circuit Analysis, 2nd Edition, 1992 (TK454 O46 1992).
- More references are posted on the course website.

Grading Policy: Coursework will be weighted as follows:

Assignments (HWs)	5%
In-class (group) exercises	5%
Class Discussion/Participation	**10%**
Midterm Examination	40%
Final Examination (comprehensive)	40%

- The lowest in-class exercise score will be dropped.
  Similarly, the lowest assignment score will be dropped.
- Late assignments will be heavily penalized or rejected.
- Cheating will not be tolerated

Assignments: Homework will be assigned throughout the semester. For each assignment, only part(s) of a selected problem will be graded. Of course, you do not know which problem will be selected; so you should work on all of them. The complete solutions (not just answers) to all problems will be posted on the course web site.

In-Class Exercises: In-class exercises will focus on current and previous topics. An exercise may be given at any time during any class period. Students are expected to work in groups of four persons. There will be no make-up exercise.

Exams: An A4 study sheet is allowed. One side for the midterm exam. Another side for the final exam.

Students must notify the instructor 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.

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 and catch up with what happened in lecture, 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 203 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 with their corresponding chapters from the textbook by Alexander and Sadiku.

Topics	Textbook Chapter
1. Intro, math review, units, circuit variables, passive sign convention, circuit elements	1
2. Intro electric circuits: Ohm's Law, node/branches/loops, Kirchoff's Laws,	2
3. Resistive circuits, series/parallel resistors, voltage divider, current divider	2
4. Nodal analysis and mesh analysis	3
5. Linearity, superposition, source transformation	4
6. Thevenin's/Norton's equivalent circuits, maximum power transfer	4
7. Basic electronics: Op amps; Review	5
8. **MIDTERM**: 8 Mar 2016 TIME 13:30 - 16:30	
9. Op amps (con't)	5
10. Capacitors and inductors; dc steady-state conditions	6
11. Sinusoids, phasors, complex number review, phasor relationships for circuit elements	9
12. Impedance and admittance, Kirchoff's laws in frequency domain, impedance combinations.	9
13. Sinusoid steady-state analysis: nodal/mesh analysis, superposition theorem, source transformation, Thevenin/Norton equiv. circuits	10
14. AC power analysis: instantaneous and average power, maximum average power transfer, effective or RMS value	11
15. Introduction to three-phase circuits, first-order circuits, and second-order circuits. Review.	7, 8, 12, 13
16. **FINAL**: 19 May 2016 TIME 13:30 - 16:30	