

Basic Electrical Engineering

ECS 303

Dr. Prapun Suksompong

prapun@siit.tu.ac.th

Lecture 1

Office Hours:

BKD 3601-7

Tuesday 14:00-16:00

RS ETU (1st floor)

Friday 15:00-16:00

Course Organization

- **Course Web Site:**

<http://www.siit.tu.ac.th/prapun/ecs303/>

- **Lectures:**

- **Friday 10:40-12:00**

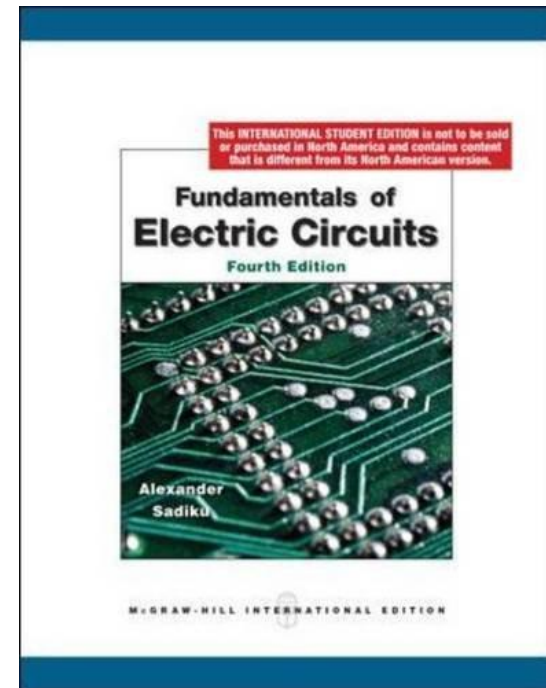
- **Friday 13:00-14:20**

- **Textbook:**

- **Fundamentals of Electric Circuits**

- By C.K. Alexander and M.N.O. Sadiku

- 4th ed., International Edition, 2009.



Tutorial session

- Friday 9:00-10:20 AM
- No tutorial this week.
- From now on, we will have tutorial every week that we have lectures.
 - Check the course announcement part on the course website regularly for news about class/session cancelling.
- Practice solving problems.

Course Web Site

- Please check the course Web site regularly.
- Announcement
- References
- Handouts/Slides
- Calendar
 - Exams
 - HW due dates

www.siit.tu.ac.th/prapun/ecs303/

ECS303: Basic Electrical Engineering

Synopsis
This course introduces basic electrical engineering principles and technology to students outside the electronics and communication curriculum.

Announcements
• Welcome to ECS303! Feel free to look around this site. However, please keep in mind that it is still under construction. All posted information and documents are subject to change. [Posted @ 11AM on Oct 26]

General Information
• **Instructor** [Dr. Prapun Suksumpong](mailto:prapun@siit.tu.ac.th) (prapun@siit.tu.ac.th)
• [Course Syllabus](#)
• [Class information](#)

Office Hours
• Room: 8KD3601-7
• Tuesday 14:00-16:00
• Thursday 9:30-11:30
• Room: ETU (1st floor, Rangsit campus)
• Friday 15:00-16:00
• Please feel free to ask any question or express any concern after class.

Required Textbook C.K. Alexander and M.N.O. Sadiku, *Fundamentals of Electric Circuits*, 4th ed., McGraw-Hill, International Edition, 2009.

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).

Handouts and Course Material

Problem Set

Calendar
Today | < > Thursday, October 22 | Week | Month | Agenda
Showing events after 9/1 | [Look for earlier events](#)
Thursday, October 22
Registration Period: 4th year
Friday, October 23
King Chulalongkorn Memorial Day
Tuesday, October 27
Registration period for second year students
Thursday, October 29
First Day of fine for late registration
Friday, October 30
9:00am ECS303
Friday, November 6
9:00am ECS303
Thursday, November 12
Last day to drop
Friday, November 13
Events shown in time zone: Bangkok

Reading Assignment
a. Chapter 1
b.

Course Outline
a. Intro, math review, units, quantities & measurements
b. Intro electric circuits: Ohm's Law, node/branches/loops, Kirchoff's Laws, resistive circuits
c. Series/parallel resistors, voltage divider, current divider, nodal analysis
d. Mesh analysis, linearity, superposition
e. Source transformation, Thevenin's/Norton's equivalent circuits, maximum power transfer
f. Basic electronics: Op amps
g. **MIDTERM:** 25 Dec 2009 TIME 09:00 - 12:00
h. Capacitors and inductors; diodes
i. First-order circuits
j. Electric power systems. Sinusoids, phasors; complex number review
k. Phasor relationships for circuit elements, impedance and admittance, Kirchoff's laws in frequency domain, impedance combinations.
l. Sinusoid steady-state analysis: nodal/mesh analysis, superposition theorem, source transformation, Thevenin/Norton equiv. circuits
m. AC power analysis: instantaneous and average power, maximum average power transfer, effective or RMS value, apparent power and power factor. Power factor correction.
n. Three-phase circuits, transformers, household/industry wiring
o. Preview of communication systems (if time permitted)
p. **FINAL:** 5 Mar 2010 TIME 09:00 - 12:00

Misc - Links

Grading System

- Coursework will be weighted as follows:

Assignments	5%
Class Participation and Quizzes	15%
Midterm Examination •25 Dec 2009 TIME 09:00 - 12:00	40%
Final Examination (comprehensive) •5 Mar 2010 TIME 09:00 - 12:00	40%

- Mark your calendars now!
- Late HW submission will be rejected.
- All quizzes and exams will be closed book.

Class Participation

- NOT the same as class attendance!
- If you come only to **receive**, you will fall **asleep**.
- Need **interaction** between lecturer and students.
- **Ask question** when there is something that you don't understand.
 - It is very likely that your friends don't understand it as well.
- If you already understand what I'm presenting, **SHOW ME!**
 - Point out the errors/typos.
 - I will raise many issues/questions in class. Try to comment on them.
- Don't be shy!

Policy

- We will start the class **on time** and will finish **on time**.
 - 7 min late = absence.
 - Raise your hand and tell me immediately if I go over the time limit.
 - Does NOT mean that I will leave the room immediately after lecture.
 - I will stay and answer questions.
- Mobile phones *must* be set to the silent mode.
- We may have some pop quizzes (without prior warning or announcement) and many in-class activities.
- Attendance and pop quizzes will be taken/given irregularly and randomly.
- Cheating will not be tolerated.

Policy (con't)

- Class participation is highly encouraged.
 - It does not mean simply sitting quietly in the class.
 - Feel free to stop me when I talk too fast or too slow.
 - Ask question! Don't be shy!
 - If you don't understand something, there is a good chance that your friends do not understand as well.
- You may be called upon to complete exercises in front of the class at any time.
 - Emphasis on EFFORT and METHODOLOGY, not right or wrong answers.
- I will surely make some mistakes in lectures / HWs / exams
 - Some amount of class participation scores will be reserved to reward the first student who inform me about each of these mistakes.

More Policy

- Get some help!
 - Do not wait until the final exam time or after the grade is out
- Office Hours
 - BKD-3601: **Tuesday 14:00-16:00**
 - RS ETU (1st floor): **Friday 15:00-16:00**
 - Appointment can be made if needed
 - Feel free to come to my office and chat!
 - Don't be shy
- You may also ask question(s) after class.
- Points on quizzes/ exercises/ exams are generally based on your entire solution, not your final answer.
 - You can get full credit even when you have the wrong final answer.
 - You may get zero even when you write down a right answer without justification.

Warning

- This class can be difficult if you don't keep up with the lectures
- I will **evaluate** your understanding of the course **regularly** through
 - In class problems/activities where you (or your group) are asked to answer short questions in front of the class
 - Quizzes
 - Exams



Calendar

Lecture

M	T	W	R	F	S	S
			29-Oct-09	30-Oct-09	31-Oct-09	1-Nov-09
2-Nov-09	3-Nov-09	4-Nov-09	5-Nov-09	6-Nov-09	7-Nov-09	8-Nov-09
9-Nov-09	10-Nov-09	11-Nov-09	12-Nov-09	13-Nov-09	14-Nov-09	15-Nov-09
16-Nov-09	17-Nov-09	18-Nov-09	19-Nov-09	20-Nov-09	21-Nov-09	22-Nov-09
23-Nov-09	24-Nov-09	25-Nov-09	26-Nov-09	27-Nov-09	28-Nov-09	29-Nov-09
30-Nov-09	1-Dec-09	2-Dec-09	3-Dec-09	4-Dec-09	5-Dec-09	6-Dec-09
7-Dec-09	8-Dec-09	9-Dec-09	10-Dec-09	11-Dec-09	12-Dec-09	13-Dec-09
14-Dec-09	15-Dec-09	16-Dec-09	17-Dec-09	18-Dec-09	19-Dec-09	20-Dec-09
21-Dec-09	22-Dec-09	23-Dec-09	24-Dec-09	25-Dec-09	26-Dec-09	27-Dec-09
28-Dec-09	29-Dec-09	30-Dec-09	31-Dec-09	1-Jan-10	2-Jan-10	3-Jan-10
4-Jan-10	5-Jan-10	6-Jan-10	7-Jan-10	8-Jan-10	9-Jan-10	10-Jan-10
11-Jan-10	12-Jan-10	13-Jan-10	14-Jan-10	15-Jan-10	16-Jan-10	17-Jan-10
18-Jan-10	19-Jan-10	20-Jan-10	21-Jan-10	22-Jan-10	23-Jan-10	24-Jan-10
25-Jan-10	26-Jan-10	27-Jan-10	28-Jan-10	29-Jan-10	30-Jan-10	31-Jan-10
1-Feb-10	2-Feb-10	3-Feb-10	4-Feb-10	5-Feb-10	6-Feb-10	7-Feb-10
8-Feb-10	9-Feb-10	10-Feb-10	11-Feb-10	12-Feb-10	13-Feb-10	14-Feb-10
15-Feb-10	16-Feb-10	17-Feb-10	18-Feb-10	19-Feb-10	20-Feb-10	21-Feb-10
22-Feb-10	23-Feb-10	24-Feb-10	25-Feb-10	26-Feb-10	27-Feb-10	28-Feb-10
1-Mar-10	2-Mar-10	3-Mar-10	4-Mar-10	5-Mar-10	6-Mar-10	7-Mar-10
8-Mar-10	9-Mar-10	10-Mar-10	11-Mar-10	12-Mar-10	13-Mar-10	14-Mar-10
15-Mar-10	16-Mar-10	17-Mar-10	18-Mar-10	19-Mar-10	20-Mar-10	21-Mar-10
22-Mar-10	23-Mar-10	24-Mar-10	25-Mar-10	26-Mar-10	27-Mar-10	28-Mar-10

Exam

Simple?

- What do I mean by something being simple?
- I will sometimes say that something is very simple and I may offend many of you to whom it's not simple.
- The point is something becomes simple after you understand it.
 - Nothing is simple before you understand it.
- So, when I say that something is simple, what I mean is if you think about it long enough it will become simple.
 - It's not simple to start with.
 - Other things are just messy.

Course Outline

1. Intro, math review, units, quantities & measurements
2. Intro electric circuits: Ohm's Law, node/branches/loops, Kirchoff's Laws, resistive circuits
3. Series/parallel resistors, voltage divider, current divider, nodal analysis
4. Mesh analysis, linearity, superposition
5. Source transformation, Thevenin's/Norton's equivalent circuits, maximum power transfer
6. Basic electronics: Op amps
7. **MIDTERM:** 25 Dec 2009 TIME 09:00 - 12:00
8. Capacitors and inductors; diodes
9. First-order circuits
10. Electric power systems. Sinusoids, phasors; complex number review
11. Phasor relationships for circuit elements, impedance and admittance, Kirchoff's laws in frequency domain, impedance combinations.
12. Sinusoid steady-state analysis: nodal/mesh analysis, superposition theorem, source transformation, Thevenin/Norton equiv. circuits
13. AC power analysis: instantaneous and average power, maximum average power transfer, effective or RMS value, apparent power and power factor. Power factor correction.
14. Three-phase circuits, transformers, household/industry wiring
15. Preview of communication systems (if time permitted)
16. **FINAL:** 5 Mar 2010 TIME 09:00 - 12:00

Reading Assignment

- Read Chapter 1 and 2 of Alexander & Sadiku

Attendance Check

- I use video attendance.
- Say your name into the camera 😊
- Make sure that your voice is loud enough