



Sirindhorn International Institute of Technology
Thammasat University

School of Information, Computer and Communication Technology

ECS 332: Course Syllabus

Semester/Year: 1/2012

Course Title: Principles of Communications

Instructor: Dr. Prapun Suksompong (prapun@siit.tu.ac.th)

Course Web Site: <http://www2.siiit.tu.ac.th/prapun/ecs332/>

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

Lectures

Time and Place:

- Wednesday 09:00-10:20 BKD 3206
- Friday 10:40-12:00 BKD 3206

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)

Prerequisite: (ECS 315 or IES 302), ECS 372 or consent of Head of School

Course Description: This course introduces the fundamental elements of analog and digital communication systems. The focus will be on the mathematical analysis of the signals and basic building blocks of communication systems. Performance of digital communication systems in the presence of noise will be discussed towards the end. The skills and knowledge gained from this class are essential for other advanced communication courses such as, data communications, computer network, digital communication systems, and mobile communications.

Textbook: [C&C] A. Bruce Carlson and Paul B. Crilly, Communication Systems: An Introduction to Signals and Noise in Electrical Communication, McGraw-Hill, 2010, 5th International edition. Call No. TK5102.5 C3 2010. ISBN: 978-007-126332-0.

References:

1. [Z&T] Rodger E. Ziemer and William H. Tranter, Principles of Communications, 6th International student edition, John Wiley & Sons Ltd, 2010. Call No. TK5105 Z54 2010.
2. [L&D] B.P. Lathi and Zhi Ding, Modern Digital and Analog Communication Systems, 4th Edition, Oxford: Oxford University Press, 2009. Call No. TK5101 L333 2009
3. J. G. Proakis and M. Salehi, Communication Systems Engineering, 2nd Edition, Prentice Hall, 2002. ISBN: 0-13-095007-6
4. S.S. Haykin, Communication Systems, 4th Edition, John Wiley & Sons, 2001. Call Number: TK5101 H38 2001.

Grading Policy: Coursework will be weighted as follows:

Assignments	5%
Quiz	5%
Class Discussion/Participation	10%
Midterm Examination	40%
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

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 to all problems will be posted on the course web site.

Quizzes and Exams:

Exams will be closed book.

Quizzes will test 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.

Students should 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 332 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 codes/assignments in public places.

Course Outline

The following is a tentative list of topics with their corresponding chapters from the textbook by Carlson and Crilly [C&C].

1. Introduction and Review of Fourier Transform [1, 2]
2. Modulation and DSB-SC [1, 3, 4]
3. QAM and AM [2, 4, 7]
4. Angle modulation [5]
5. Sampling Theorem [6]
6. **MIDTERM: 16 Aug 2012 TIME 13:30 - 16:30**
7. Analog Pulse Modulation [6, 7]
8. DTFT, DFT, FFT [2]
9. Pulse Shaping, Digitization [11, 12]
10. Review of theory of probability and random processes [8-10]
11. Source Coding and Entropy [11, 13, 16]
12. Introduction to digital data transmission: binary symmetric channel, detectors, channel coding [13]
13. Advanced topic: Multi-carrier and OFDM systems [14]
14. **FINAL: 15 Oct 2012 TIME 09:00 - 12:00**