

DEE 2548: Signals and Systems (Spring 2015)

Time: 1CD-ED201, 3B-ED101; (Feb. 24 – June 26)

Instructor: 杭學鳴 (x31861) hmhang@mail.nctu.edu.tw

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Objectives: Signal and Systems is a basic course for further studies in signal processing, communication systems, and control systems. This course covers the fundamental tools used in continuous-time and discrete-time signal and system analysis. Topics included are time-invariant system analysis, Fourier transform, Laplace transform, and introduction to sampling theory. Matlab computer assignments may be included to help students acquire an in-depth understanding of the key concepts. (The lectures are in English.)

Classnotes: 杭學鳴 <http://cwww.ee.nctu.edu.tw/course/>

Textbook: S. Haykin and B. Van Veen, *Signals and Systems, 2nd Ed.*, Wiley, 2003.

Recommended Readings:

- (1) A.V. Oppenheim, A.S. Willsky, and S.H. Nawab, *Signals and Systems, 2nd Ed.*, Prentice-Hall, 1997.
- (2) B.P. Lathi, *Signal Processing and Linear Systems, 2nd Ed.*, Oxford University Press, 2004.

Grading:

7-8 Homework + 5-6 Computer Assignment (Matlab)	10%
2 Quizzes (1 hour, 7.5% each, closed book)	15%
Midterm Exam (closed book)	35%
Final Exam (closed book)	40%

(The same set of homework problems and exams are given to both Chinese and English classes.)

Background: Calculus, Linear Algebra, Complex Variables (Circuits Theory)

Contents:

1. Introduction (Chap. 1 of textbook)
2. Time-domain representations of linear time-invariant systems (Chap. 2)
3. Fourier representations of signals and linear time-invariant systems (Chap. 3)
4. Applications of Fourier representations to mixed signal classes (Chap. 4)
5. Laplace transform (Chap. 6)
6. z-transform (Chap. 7)