

**Stevens Institute of Technology**  
**Department of Electrical and Computer Engineering**  
**Course Outline**

**EE448A – Digital Signal Processing**

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**Text** S.K. Mitra, Digital Signal Processing: A Computer Based Approach, 4th edition, McGraw Hill, 2010, ISBN 007736676X. Also download Lab Manual and Matlab M-files at [http://higherred.mcgraw-hill.com/sites/0072865466/student\\_view0/lab\\_manual.html](http://higherred.mcgraw-hill.com/sites/0072865466/student_view0/lab_manual.html))

**References** A.V. Oppenheim and R.W. Schaffer, *Discrete-Time Signal Processing*, 3<sup>rd</sup> edition, Prentice Hall, 2010.  
Oppenheim, Willsky with Nawab, *Signals and Systems*, 2e, Prentice Hall, 1997.

**Instructor** Dr. Hongbin Li, ECE Department, Stevens Inst. of Tech., Hoboken, NJ 07030  
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**Class Times & Location**

6:15 – 8:45 B430

**Grader** See class website.

**Office Hours** See class website

<b>Grading</b>	Homework and Matlab Projects	15%
	Quizzes	15%
	Midterm Exam:	35%
	Final Exam:	35%

**Prerequisites** EE348 System Theory

**Contents** Time-domain characterizations: basic operations and classifications of discrete-time (DT) signals; basic sequences; sampling; DT systems properties; impulse response, linear convolution, and difference equations. Transform-domain characterizations: DTFT, DFT, Z-transform and properties; circular convolution; linear convolution by DFT/FFT; pole-zero locations versus causality and stability; and partial-fraction expansion; Transform-domain analysis of LTI systems: frequency response, magnitude, phase and group delays; transfer functions; ideal filters; linear-phase FIR filters; simple standard FIR and IIR filters; comb filters; all-pass filters; minimum-phase and maximum phase; inverse systems. Digital Processing of continuous-time signals: sampling theorem, reconstruction, and analog filters. Digital filter design: bilinear transform, and window method.

**Holidays** No class on Feb 16 (make-up class on Feb 17) and Mar 16 (Spring Break)

**Policies** Homework/projects will be assigned on a regular basis. Attendance will be checked randomly. **No late work will be accepted. No make-up exams/quizzes will be given** (unless under inevitable circumstances, e.g., serious illness with doctor's proof, etc.). Minimum grade for quizzes, homework, or projects will not be dropped from your final grade. You are responsible for all assignments, changes of assignments, announcements of exam dates, and other course-related events announced in class or sent through e-mail.