

Indian Institute of Technology Bombay
Dept of Electrical Engineering

Handout 1

EE 603 Digital Signal Processing and Applications

General Course Information

July 20, 2016

EE 603 Digital Signal Processing and Applications

Time and location: Wed/Fridays, 9:30–10:55 am, EEG-002

Web page: <http://www.ee.iitb.ac.in/~bsraj/courses/ee603/>

Instructor: Prof. Sibi Raj B Pillai

Office : 331A, Third Floor, EE Main Building

Phone : 7419

E-mail : `bsraj att ee`

Time : Feel free to walk-in or call

Prerequisites:

Logical reasoning skills and appreciation for abstract concepts.

Course mechanics:

Assignments/Quiz 20%, Midterm Exam 30%, Final Exam 40%,
Programming Experiments-GNURADIO 10%.

Approximate Outline:

Signals, Systems, Motivation, Linear Systems, Examples

Signal Representation, Transforms

Sampling and Reconstruction, DTFT, DFT and FFT

Basics of Filtering, analog and digital filter design

Applications: Error Correction/Compressed Sensing/Spectral Estimation

Note: most topics mentioned in the syllabus at ee website will be covered.

Textbook: Feel free to choose one among the first four books listed below. Additional material and further references will be added at the website. Lecture notes for most parts will be provided.

Reference Material:

1. J. Proakis and D. Manolakis, *DSP: Principles, Algorithms and Applications* Prentice Hall 1997.
2. A. Oppenheim and R. W. Schaffer, *Discrete-time Signal Processing*, Pearson 2014
3. L. R. Rabiner and B. Gold, *Digital Signal Processing*, PHI 1976
4. A. Oppenheim, A. Willsky and S. Nawab, *Signals and Systems* Prentice Hall 1996.
5. P. Bremaud, *Mathematical Principles of Signal Processing*, Springer 2002.
6. E. Stein and R. Shakarchi, *Fourier Analysis*, Princeton Lectures in Analysis 2003.