

EE 524
Digital Signal Processing
Fall 2006
MWF 10–11, Howe 1304

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Prerequisites: EE 322, EE 424, and knowledge of linear algebra, or consent of the instructor.

Textbook: J.G. Proakis and D.G. Manolakis, Digital Signal Processing: Principles, Algorithms and Applications, 4th ed., Prentice-Hall, 2005.

Reference Books:

D.G. Manolakis, V.K. Ingle, and S.M. Kogon, Statistical and Adaptive Signal Processing: Spectral Estimation, Signal Modeling, Adaptive Filtering and Array Processing, Boston, MA: Artech House, 2005.

A.V. Oppenheim and R.W. Schaffer with J.R. Buck, Discrete-Time Signal Processing, 2/e, Prentice-Hall, 1999.

S. Haykin, Adaptive Filter Theory, 4th ed., Upper Saddle River, NJ: Prentice-Hall, 2002.

M.H. Hayes, Statistical Digital Signal Processing and Modeling, New York: Wiley, 1996.

Grading (tentative):

- 50% Homeworks and projects,
- 30% Midterm Examinations (2),
- 20% Final Examination.

Course Outline:

- Review of signals and systems, frequency response, z transforms, sampling
- Introduction to filter banks and multirate signal processing, (Chap 11)
- Random signals and matrix algebra for signal description,
- Optimal and adaptive filtering,
- Introduction to beamforming and adaptive arrays.
- Power spectrum estimation (parametric and nonparametric),