

ELE 771  
Spectral Estimation  
Fall 2016

Place: E-9

Time: Thursday 13:00-15:50

Course Outline:

W1-Oct.06 Review. Of Probability.

W2- Oct.13 Power Spectral Density, Periodogram.

W3- Oct.20 Avg. Periodogram, Blackman-Tukey, Parametric Modelling.

W4- Oct.27 Linear Prediction, Levinson Algorithm, Maximum Entropy SpE

W5-Nov.03 Statistical Properties, Sinusoid in White Noise, Autocorrelation,  
Covariance, Modified Cov. Methods.

W6- Nov.10 Burg Algorithm , Model Order, Spectral Est. of Noisy AR, MA:  
Durbin's Method.

W7- Nov.17 EXAM

W8- Nov.24 ARMA, Minimum Variance, Sinusoidal Parameter Estimation.

W9- Dec.01 Properties of ACF matrix, MUSIC, ESPRIT.

W10- Dec08 Bispectrum, Higher order Spectrum

W11- Dec15 Spectrogram, Wigner dist., Wavelet tr.

W12- Dec22 Evolutionary Periodogram.

W13-Dec29 Array Processing.

W14- Jan05 Project presentation.

References:

Spectral Analysis of Signals, P.Stoica, Prentice-Hall.

Modern Spectral Estimation, S. Kay, Prentice-Hall.

Digital Spectral Analysis, L. Marple, Prentice-Hall.

Spectral Analysis and Time-Series, Priestley, Academic Press.

Mathematical Methods and Algorithms for Signal Processing, T.K. Moon  
and W.C. Stirling, Prentice-Hall.

Grading: Homework (15%), Term Project (10%), MidTermExam (30%),  
Final Exam (45%).