UNIVERSITY OF ALABAMA IN HUNTSVILLE
Department of Electrical and Computer Engineering

**EE 748 Digital Signal Processing
Algorithms and Applications**

Spring 1995

Instructor: Payman Arabshahi, EB 254. Tel: (205) 895–6684, E-mail: payman@ebs330.eb.uah.edu.
Office hours: Tuesdays and Wednesdays, 11:00 am - 12:00 noon.

Textbook: J.G. Proakis et. al. *Advanced Digital Signal Processing*, Macmillan: New York, 1992.

Course Outline: The following topics will be covered in class:

- Statistical Signal Processing (chapters 4-6)

    - Linear Prediction and Optimum Linear Filters
    - Least Squares Methods for System Modeling and Filter Design
    - Adaptive Filters

- Multirate Signal Processing (chapter 3)

- Spectral Estimation (chapters 8 & 9)

Time permitting, material from Chapter 2 (computationally efficient algorithms for convolution and DFT) will also be covered.

Prerequisite: EE 648 (Discrete-time signal processing), and EE 420/500 (Probability and Stochastic Processes) or equivalent.

Grading:

Computer Projects 40%
Homework   20%
Final   40%

Notes:

1. Computer projects will be carried out in MATLAB, which is installed on the PC's in the DSP Laboratory (Room 262). The entrance code for the room is 84215.

2. The final will be a comprehensive, take home exam.

References:

1. S. Haykin, *Adaptive Filter Theory*. Prentice-Hall: Englewood Cliffs, NJ, 1991.

2. A.V. Oppenheim, and R.W. Schafer, *Discrete-time Signal Processing*. Prentice-Hall: Englewood Cliffs, NJ, 1991.

3. L.L. Scharf, *Statistical Signal Processing*. Addison Wesley: Reading, MA, 1991.

4. Technical Staff, The Analytical Sciences Corporation, *Applied Optimal Estimation*. MIT Press: Cambridge, MA, 1974.

5. A. Papoulis, *Signal Analysis*. McGraw-Hill: New York, 1977.

6. A. Papoulis, *Probability, Random Variables, and Stochastic Processes*. McGraw-Hill: New York, 1991.