KING FAHD UNIVERSITY OF PETROLEUM & MINERALS
ELECTRICAL ENGINEERING DEPARTMENT

EE406- DIGITAL SIGNAL PROCESSING
FALL SEMESTER 2003-2004

COURSE CONTENT:

- Discrete-Time Signals and Systems:
  Classification of signals; Linear shift-invariant systems;
  System response; Convolution; Stability and causality
- The z-Transform:
  Definitions and region of convergence; Inverse z-transform;
  Properties of the z-transform; Realization; System function;
  Frequency response; Difference equations
- Discrete-Time Networks:
  Signal flow graphs
  Realizations forms:
  Direct, cascade, and parallel forms
- Sampling and Discrete-Time Fourier Transform:
  Definitions; Convergence conditions; Properties of the DTFT; Aliasing;
  Analog-to-digital and digital-to-analog conversions
- Introduction to Discrete Fourier Transform:
  Definitions; Properties; Efficient computation of the DFT; FFT algorithms
- Introduction to Digital Filters Design:
  FIR versus IIR; Linear-phase filters;
- Windowing design techniques for FIR.

PREREQUISITE: EE370

TEXBOOK:

L. B. Jackson, *Digital Filters and Signal Processing,* 3rd Edition, KAP, 1995

REFERENCES:

1. A. V. Oppenheim and W. Schafer, *Digital-Time Signal Processing,* 4th Edition, Oxford Publishing, 1998.
2. J. Proakis and D. G. Manolakis, *Digital Signal Processing, Principles, Algorithms, and Application.* 3rd Edition, Prentice Hall, 1996.
3. R. A. Roberts and C. T. Mullis, *Digital Signal Processing,* Addison-Wesley, 1987.

GRADING POLICY:

PROJECTS & QUIZZES: 25% **EXAM I (**Oct.18 at 8 pm Room:14-108**):** 20%
EXAM II (Dec.17 at 6 pm Room: 14-108**):** 20% **FINAL EXAM:** 35%

INSTRUCTOR:

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