

The University of Texas at Tyler
Department of Electrical Engineering

EENG 5308: Digital Signal Processing

Syllabus

Catalog Description:

Introduction to modern digital processing. Basic building blocks, the basic math (Z-Transforms, Fourier Transforms, Fast Fourier Transforms), deterministic processing, FIR and IIR filters, polyphase filtering, introduction to statistical filtering, basic power spectral density. Three hours of lecture per week. Prerequisite: ENGR 5307 or CI.

Prerequisites: Introduction to Random Processes (EENG 5307)

Credits: 3 (3 hours lecture, 0 hours laboratory per week)

Text(s): Oppenheim, Schafer. Discrete-Time Signal Processing, 2e. Prentice Hall, 1999.

Additional Material: MATLAB

Course Coordinator: Hector A. Ochoa, Assistant Professor

Topics Covered: (paragraph of topics separated by semicolons)

Discrete-Time signals and systems; Z transform; Sampling of Continuous time systems; Transform analysis of linear time-invariant systems; Filter design techniques; the DFT and FFT algorithms; Fourier analysis of signals using the DFT; DSP applications.

Evaluation Methods: (only items in dark print apply):

1. Examinations / Quizzes
2. Homework
3. Report
4. Computer Programming
5. Project
6. Presentation
7. Course Participation
8. Peer Review

Course Objectives¹: By the end of this course students will be able to:

1. Discuss and describe DSP fundamentals: sampling, frequency analysis and filtering[1,2]
2. Simulate and Apply digital signal processing concepts to provide solutions to engineering problems[3,5]
3. Evaluate the performance of DSP implementations [3,5].

¹Numbers in brackets refer to method(s) used to evaluate the course objective.

Relationship to Program Outcomes²: This course supports the following Electrical Engineering Program Outcomes, which state that our students will:

1. Graduates of the program will possess a breadth and depth of knowledge in electrical and computer engineering. [1,2,3]
2. Graduates of the program will possess and demonstrate oral and written communication skills. [1,2,3]
3. Graduates of the program will demonstrate the capability to perform independent learning and investigation.[2,3]

²Numbers in brackets refer to course objective(s) that address the Program Outcome.

Contribution to Meeting Professional Component: (in semester hours)

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|----------------------------------|---|-------|
| Mathematics and Basic Sciences: | | hours |
| Engineering Sciences and Design: | 3 | hours |
| General Education Component: | | hours |

Prepared By: Mark Humphries, Adjunct Professor Date: 13 January 2008
Modified By: Hector A. Ochoa, Assistant Professor 3 June 2009