The University of Texas at Tyler
Department of Electrical Engineering

EENG 5399.530

Independent Study: 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.

Prerequisites: Introduction to Random Processes (EENG 5307)

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

Text(s): Oppenheim, Schafer. Discrete-Time Signal Processing, 2e. Prentice Hall, 1999.
McClellan, Schafer, Yoder. DSP First, 2ed, Pearson, 2016.
Mitra. Digital Signal Processing: A Computer-Based Approach, 4ed, McGraw-Hill, 2010.

Additional Material: MATLAB, Class Notes

Course Coordinator: Seyed Ghorshi, PhD

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 Objectives[1]: By the end of this course students will be able to:

1. Discus 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].

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

Relationship to Program Outcomes [2]: 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]

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

Contribution to Meeting Professional Component: (in semester hours)

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
	Seyed Ghorshi, PhD		13 January 2019