EESC6360.502.16F
Digital Signal Processing I
The University of Texas at Dallas
Fall 2016

Day & Time:
Monday & Wednesday: 5:30pm-6:45pm (PHY 1.202)

Professor Contact Information
Prof. Carlos Busso
email: busso@utdallas.edu
phone: (972) 883-4351
Room ECSN 4.216
Office hours: Monday & Wednesday 1:00-2:00 p.m. (or by appointment)

Course Pre-requisites, Co-requisites, and/or Other Restrictions

(strictly enforced) EE 3302 or EE 4361 or equivalent.

Textbook:

Digital Signal Processing, Principles, Algorithms, and Applications, 4th Edition, by John G. Proakis, and Dimitris G. Manolakis, Prentice Hall (ISBN 13: 978-0131873742) (April 7, 2006).

Suggested Texts, readings, & Materials:

Discrete-Time Signal Processing, by A.V. Oppenheim, and R.W. Schafer, Prentice Hall; 3 edition (August 28, 2009), ISBN 978-0131988422

Understanding Digital Signal Processing, Richard Lyons, Prentice Hall; 3 edition (November 11, 2010) ISBN 978-0137027415

Digital Signal Processing, A Computer-Based Approach, S.K. Mitra, McGraw-Hill Science/Engineering/ Math; 4 edition (September 13, 2010) ISBN-13: 978-0077366766

Student Manual for Digital Signal Processing with Matlab, Proakis & Ingle, Prentice-Hall, 2007, ISBN 0-13-199108-6 (Very useful in conjunction with the textbook)

Schaums Outline of Digital Signal Processing, (Schaum's Outline Series) by Monson Hayes, McGraw-Hill; 2 edition (September 7, 2011), 978-0071635097

Course Description:

Analysis of discrete time signals and systems, Z-transform, discrete Fourier transform, fast Fourier transform, analysis and design of digital filters. Prerequisite:

Course Website:

elearning.utdallas.edu

Student Learning Outcomes:

Students are expected to be able to:

1. Convert Continuous Time (CT) signals to Discrete Time (DT) signals and vice versa using sampling theorem

2. Analyze DT signals and Linear Time Invariant (LTI) systems using convolution sum and difference equations.

3. Apply Z transforms to DT signals and systems.

4. Determine the spectral behavior of DT signals and systems using Fourier Series, Fourier Transform and poles and zeros.

5. Design elementary infinite impulse response (IIR) and finite impulse response (FIR) filters using pole-zero assignment techniques.

6. Perform spectral analysis and high speed convolution using Discrete/Fast Fourier Transform (DFT/ FFT) and its properties.

Topics:

Introduction and Sampling Theorem (Chapters 1, 6.1 & 6.2 & 6.4) — 5 lectures

Discrete Time Signals and Systems (Chapter 2) — 5 lectures

Z-Transforms and Analysis of Linear Time Invariant Systems (Chapter 3) — 5 lectures

Frequency Analysis of Discrete Time Signals and LTI Systems (Chapters 4 & 5) —8 lectures

Discrete Fourier Transform (Chapter 7) — 4 lectures

Fast Fourier Transform (Selected material from Chapter 8) — if time allows

Assignment and Grading

Exam 1	(21%)	Wednesday,	09/28/2016 (5:30pm-6:45pm)	
Exam 2	(21%)	Wednesday,	11/02/2016 (5:30pm-6:45pm)	
Final	(35%)	TBD		
Quiz	(15%)			
Project	(8%)			

Quizzes:
Quiz 1: 8/31/2016
Quiz 2: 9/14/2016
Quiz 3: 10/12/2016
Quiz 4: 11/16/2016
Quiz 5: 12/07/2016

* Exams and final are in-class, closed book & notes
* HW will be assigned. They are not graded. Quizzes will be similar to homework during lecture time
* No exam grades will be dropped. No Make-up exam will be given without medical excuses or prior arrangement

Tentative *percent - letter grade* conversion					
94-100	A	70-77	B	53-57	C
85-94	A-	63-70	B-	<53	F
77-85	B+	57-63	C+		

I preserve the right to curve/modify this conversion

Important Dates:

Last day to drop a class without a "W" 09/07/2016
Last day of classes: 12/07/2016

Teacher Statement:

My goal as teacher is that you learn as much as possible about digital signal processing, that you find the material interesting and that you finish the course wanting to know more about this subject. You can facilitate this by:

(i)   ask me questions, make use of my office hours,
(ii)   read something other than the required text book,
(iii) if you are struggling with the material, come and ask me about it as soon as you realize this and not the day before the midterm or final,
(iv)   learn to use MATLAB,
(v)   turn up for the lectures.
(vi)   please be on time - late arrivals are very disturbing to other students in the class and also to me. I review the previous class at the start of each lecture and also make announcements at this time.

Course & Instructor Policies

Email
Emails are the preferred way to contact me. Please add <EESC6360> in the subject of emails, so I can give priority to your emails. I only read eLearning mail periodically.

Late Work
Assignments should be turned on time. Make-up exams or projects will not be given without advance notice to the instructor.

Extra Credit
I do not offer "extra credit" work or "special consideration" to allow students a chance to raise their grade. If a personal situation arises during the semester that may affect your classroom performance, please talk to me sooner rather than later. If you wait until the end of the semester, I won't be able to help you. I can work with you more easily if you speak to me when the situation arises. I cannot help you if I do not know you need help.

Classroom Citizenship
In keeping with this course's professional communication mandate, students are expected to use every opportunity in the course to practice communicating in a civil and professional manner. It is not allowed to exit the class during the lectures to avoid distracting other students. If a student need to leave early, he/she must let the instructor know before the class.

Technology Requirements
The course is taught using eLearning. The student should develop the habit of checking both eLearning and their UTD email often for assignments and announcements. Reliable and frequent internet connectivity is indispensable – not having internet access will make your learning more difficult and will not serve as a valid excuse for shortcomings. Failure to check UTD or eLearning email, errors in forwarding email, and email bounced from over-quota mailboxes are not acceptable excuses for missing course email. Additionally, to protect your privacy rights, I will only send email through your official UTD email address or eLearning email. If you choose, you can redirect both of these addresses to external addresses.

Classroom and Equipment Use Policies
No laptops, cell phones, pagers, or other electronic messaging services may be used in the classrooms, unless the student (1) need a laptops for the presentation (2) have cleared it with me first and then only on an emergency basis.

Technical Support

If you experience any problems with your UTD account you may send an email to: assist@utdallas.edu or call the UTD Computer Helpdesk at 972-883-2911.

Comet Creed

This creed was voted on by the UT Dallas student body in 2014. It is a standard that Comets choose to live by and encourage others to do the same:

"As a Comet, I pledge honesty, integrity, and service in all that I do."

UT Dallas Syllabus Policies and Procedures

The information contained in the following link constitutes the University's policies and procedures segment of the course syllabus.

Please go to **http://go.utdallas.edu/syllabus-policies** for these policies.

These descriptions and timelines are subject to change at the discretion of the Professor.