The University of Texas at Dallas
Erik Jonsson School of Electrical Engineering and Computer Science
CE/EE/TE 3302-002 Signals and Systems (3 sem. hrs)
Fall 2013

Instructor: Dr. Andrea Fumagalli
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Covered Topics: List of topics covered in each exam:
http://www.utdallas.edu/~andreaf/courses/ee3302/syllabus/topics

Textbook:
Alan V. Oppenheim, Alan S. Willsky, and S. Hamid Nawab, "Signals & Systems", Second Edition, Prentice-Hall Inc., New Jersey, 1997.
ISBN 0-13-814757-4

Other suggested book:
J.H. McClellan, R.W. Schafer, M.A. Yoder, "DSP First - A Multimedia Approach", Prentice-Hall Inc., New Jersey, 1998
ISBN 0-13-243171-8.

Course objective:
This course presents some of the basic concepts and applications of signals and systems. The modeling of these signals and systems is mathematical in nature and requires specific skills that can be learned in the prerequisite courses listed below. This course will mainly deal with continuous-time signals, with parallel considerations on digital signals when possible. By the end of this course students are able to solve time convolution sum and integral, compute Fourier series, compute Fourier transform, compute inverse Fourier transform, compute Z transform, compute inverse Z transform, apply sampling theorem to convert continuous time signal into discrete time signal.

Course learning outcomes and performance criteria:

- Ability to apply the convolution theorem for continuous signals,
- Ability to compute the Fourier series of a periodic signal,
- Ability to compute the Fourier transform of energy signals,
- Ability to apply the Fourier transform properties,
- Ability to analyze a discrete LTI system using discrete linear convolution,
- Ability to apply the Z-transform for analyzing discrete-time signals,
- Ability to convert a continuous time signal to the discrete time domain and reconstruct using the sampling theorem.

Concepts/tools to be acquired in this course:

- Chap 1: Signals and Systems,
- Chap 2: Linear Time-Invariant Systems,
- Chap 3: Fourier Series Representation of Periodic Signals,
- Chap 4: Continuous-Time Fourier Transform,
- Chap 7: Sampling,
- Chap 10: Z-Transform.

Prerequisites:
MATH 2420 (Differential Equations) and (optional but encouraged) EE 3301 (Electrical Network Analysis)

Homework/Exams:
Student needs to pass three written exams. The first exam covers the topics discussed during the first part of the course and will be given after the 10th lecture. The second exam covers the topics discussed during the central part of the course and will be held after the 20th lecture. The third exam covers the topics discussed during the last part of the course and will be held during the UTD official week for exams. Homework will be given to test student's knowledge and understanding of the covered topics prior to each written exam. Homework and written exams must be individually done by each student without collaboration with others. Late homework will not be allowed.

Grading policy:
Final grade will be determined using 10% of the homework grade and 45% of the best two among midterm I, midterm II, and final exam. To be considered for "A+" grade, students must take and do well in all three written exams.