Course Description: This course provides a senior or first-year graduate-level treatment of digital signal processing. We review basic discrete-time signals and systems, and then move on to the discrete-time Fourier transform, sampling of analog signals, the DFT and FFT, the Z transform, and digital filter design. We also review DSP architectures and finite precision effects. The course includes written and Matlab-based assignments, as well as a semester project.

Time: MWF 11:00-11:50

Location: 129 Caruth Hall

Instructor: Carlos E. Davila, 328e Caruth Hall  
Office Hours Tu, Th 10:00-12:00  
Phone (214) 768-3197


Topics:  
I. Review of Discrete-time Signals and Systems  
II. Discrete-time Fourier Transform  
III. Nyquist Sampling Theorem and Adjusting Sampling Rate  
IV. The DFT and FFT with Applications  
V. The Z Transform  
VI. FIR and IIR Digital Filter Design  
VII. Filter Structures and Finite Precision Effects  
VIII. Introduction to Digital Signal Processors

Grading Policy:  
Midterm Exam 35%  
Final Exam 35%  
Project 10%  
Written Homework Assignments 10%  
Matlab Programming Assignments 10%
An Incomplete (I) may be given if the majority of the course requirements have been completed with passing grades but for some justifiable reason, acceptable to the instructor, the student has been unable to complete the full requirements of the course. Before an (I) is given, then instructor should stipulate in writing to the student the requirements and completion date that are to be met and the grade that will be given if the requirements are not met by the completion date. The maximum period of time allowed to clear the Incomplete grade is 12 months (except for graduate thesis and dissertation courses). If the Incomplete grade is not cleared by the date set by the instructor or by the end of the 12-month deadline, the (I) may be changed to an F or to another grade specified by the instructor. The grade of (I) is not given in lieu of an F, WP, or other grade, each of which is prescribed for other specific circumstances. If the student’s work is incomplete and the quality has not been passing, and F will be given. The grade of (I) does not authorize the student to attend the course during a later semester. Graduation candidates must clear all Incompletes prior to the deadline in the official University Calendar, which may allow less time than 12 months. Failure to do so can result in removal from the degree candidacy list and/or conversion of the (I) to the grade indicated by the instructor at the time the (I) was given.