Course Description: Digital signal processors (DSP’s) are programmable semiconductor devices which are used extensively in cellular phones, high density disk drives, and high-speed modems. This laboratory course focuses on programming the Texas Instruments TMS320C55, a fixed point processor. The emphasis is on assembly language programming and the laboratories utilize a hands-on approach which will focus on the essentials of DSP programming while minimizing signal processing theory. Laboratory topics include implementation of FIR and IIR filters, and a real-time spectrum analyzer. Though no formal prerequisites are required, some basic knowledge of discrete-time signals and digital logic systems is suggested. EE 7373 students must complete one additional lab.

Time: Lecture: M 12:00-12:50 pm, Lab: W 12:00-1:20

Location: Lecture: 102 Junkins, Lab: 102 Junkins

Instructor: Carlos E. Davila, 341 Junkins

Reading Materials: • EE 5373/7373 Lecture Slides
• TMS320C55xx online User’s Guides
• Real-Time Digital Signal Processing
  Implementations, Applications and Experiments with TMS320C55X
  S. M. Kuo and B. H. Lee
  John Wiley and Sons, LTD. 2001
  ISBN: 0470841370

Topics: I. CCS Tutorial
II. Addressing Modes and Arithmetic Instructions
III. Fixed Point Arithmetic
IV. FIR Filter Implementation
V. IIR Filter Implementation
VI. Use of the DSK Codec
VII. Use of Interrupts
VIII. Use of the C Compiler: Implementation of the FFT
IX. Real-Time Spectrum Analyzer
X. MP3 Player

Grading Policy: Laboratory Assignments: 70%
Final Exam: 30%

Students work in groups of two. After each lab is completed, each group should do a short “demo” their program to the lab instructor before they can receive credit. All lab write-ups should be submitted electronically to the@engr.smu.edu. Labs are due on the due date given on the course web page. Grades for late labs will be deducted 50%.
SMUIncomplete Grades Policy

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.