**Course Description:** This course emphasizes discrete-time processing and analysis of signals encountered in medicine. The course consists of a series of modules that involve the use of Matlab on electrophysiologic signals, actual medical images, and tissue phantoms. Modules include discrete-time filtering of electrocardiograms, spectral analysis of electroencephalograms, computerized tomography (CT) scans, differential pulse code modulation, subband, transform and lossless coding of medical images, ultrasound, and Hidden Markov models.

**Time:** TTh 12:30-1:50 PM  
**Location:** 125 Caruth Hall  
**Instructor:** Carlos E. Davila  
**Text:** none, however several texts will be recommended and a number of survey articles will be studied.

**Modules:**  
I. A/D and D/A Conversion  
II. Filtering  
III. Spectral Analysis (parametric, non-parametric, and time-frequency distributions)  
IV. Computerized Tomography (CT)  
V. Signal Compression  
VI. Image Compression  
VII. Ultrasound Signal Processing

**Grading Policy:** Module Projects 80%  
Final Exam 15%  
Course Participation 5%

The modules will be due on the date given on the course web page. Students in EE 7373 will be required to complete one additional module than students in EE 5373. Course participation includes but is not limited to class attendance, class participation, communications on course content via the course mailing list and other course communications tools.

**SMU Incomplete 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 de-gree candidacy list and/or
conversion of the (I) to the grade indicated by the instructor at the time the (I) was given.