EE 5345/7345
Medical Signal Analysis
Spring 2007

Course Description: This course emphasizes discrete-time processing and analysis of signals encountered in medicine and the life sciences. The course consists of a series of modules that involve the use of Matlab on electrophysiologic signals, actual medical images, and tissue phantoms. Topics include discrete-time filtering, spectral analysis, computerized tomography (CT), principle and independent component analysis, the wavelet transform, and time-frequency analysis. Where possible, we will apply these techniques to actual medical or biological signals.

Time: TTh 12:30-1:50 PM
Location: 125 Caruth Hall
Instructor: Carlos E. Davila

Text: J.L. Semmlow, Biosignal and Biomedical Image Processing.

Modules:
I. Basic Concepts
II. Digital Filters
III. Spectral Analysis (Classic Methods)
IV. Spectral Analysis (Modern Methods)
V. Time-Frequency Methods
VI. The Wavelet Transform
VII. PCA and ICA
VIII. Image Processing
IX. Image Reconstruction

Grading Policy: Homework Assignments 30%
Final Exam 40%
Semester Project 25%
Course Participation 5%

Students in EE 7345 will be required to complete a more advanced semester project compared to students in EE 5345. Course participation includes but is not limited to class attendance, class participation, and communications on course content via the discussion board.

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, an 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.