ECE 497 - MD: Wavelets in Signal Processing
Course Syllabus – Fall 2002
10:00 – 11:20 Tuesdays and Thursdays, 163 Everitt Lab
http://www.ifp.uiuc.edu/~minhdo/teaching/ECE497.html

Instructor: Minh N. Do
2211 Beckman Institute
244-4782
minhdo@uiuc.edu

Office Hours: Tuesdays 15:00 – 17:00 (+ appointments by email).

Course Overview: Wavelets have established themselves as an important tool in modern signal processing as well as in applied mathematics. It is the purpose of this course to establish the theory necessary to understand wavelets and related constructions. A particular emphasis will be put on constructions that are amenable to efficient algorithms, since ultimately these are the ones that are likely to have an impact. We thus study applications in signal processing and communications where time-frequency transform like wavelets play an important role. Computer and research projects involving independent study will be assigned.


Grading:
Homework (assign 6 sets, count 5) 15%
First midterm (open book) 25%
Second midterm (open book) 25%
Project (proposal + presentation + report) 35%

Course Objectives: Upon completion of the course, you should be able to:

1. understand the terminology that are used in the wavelets literature.
2. understand the concepts and theory behind wavelets constructions from an interdisciplinary perspective that unifies harmonic analysis (mathematics), filter banks (signal processing), and multiresolution signal analysis (computer vision).
3. apply wavelets and multiresolution techniques to a problem at hand, and justify why wavelets is the right tool.
4. research, present, and report a selected project within a specified time.
5. think critically, ask questions, and apply problem solving techniques.