

UNIVERSITY OF CALIFORNIA-BERKELEY  
DEPARTMENT OF MATHEMATICS  
**Math 118, Fall 05**

**Lectures**

Time MWF 11:10 - 12:00

Place 9 Evans Hall

**Lab hours.**

TBD, computer lab, basement of Evans Hall

**Instructor.**

Name Olga Holtz

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Office hours WF 14:00 - 15:00 and by appt.

**Goals of the course.** The course is meant to serve as an introduction into the theory of wavelets, multiresolution, splines, filter banks, and their applications in science and technology.

**Approximate content of the course.** Data representation, Fourier series and orthogonal systems, Fourier transform, multiresolution analysis (MRA), construction of wavelets via MRA, properties of wavelets and scaling functions, splines, good representation systems, signal analysis, filter banks, applications to denoising, feature detection, and image compression.

**Books.** WAVELETS AND FILTER BANKS by Strang and Nguyen is recommended. A FIRST COURSE ON WAVELETS by Hernandez and Weiss, A FIRST COURSE IN WAVELETS WITH FOURIER ANALYSIS by Boggess and Narcowich and lecture notes on wavelets by Amos Ron will also be used.

**Homework and grading.** Homework will be assigned about once a week and will involve programming in MATLAB. The final grade will be based on homework (30%), midterm (30%) and a final (40%).

**Class email.** I welcome communication by email and intend to send homework-related email to the class.

**Class website.** <http://www.cs.berkeley.edu/~oholtz/118>