

Math612-600: Partial Differential Equations, Spring 2007

Professor Emil J. Straube

MWF 9:10 - 10:00, BLOC163

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Course Content: This is the second semester of a one year sequence (Math611-Math612). This sequence constitutes an introduction to differential equations from a modern perspective. Topics covered are as follows (Math611 covers topics 1-2, 3-5 are covered in Math612):

- basic theory of ODEs and vector fields
- the Laplace equation and wave equation
- Fourier analysis, distributions, and constant coefficient linear PDEs
- Sobolev spaces
- linear elliptic equations

This outline follows the first five chapters in Taylor's book (see below). However, I will omit and/or add material as needed.

Prerequisites: This is a mid-level graduate sequence. The prerequisites (for the sequence) are a solid background in real and functional analysis, and very basic complex analysis. For Math612, Math611 (or equivalent) or approval of instructor is required.

Book: M.Taylor: Partial Differential Equations, *Basic Theory*, Springer Texts in Applied Mathematics 23. (This is volume 1 of a 3-volume set.)