

Math 436 Partial Differential Equations, Fall 2000

Nancy Stanton

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Office hours: By appointment and Tues.-Thurs. 9-10:30.

Text: Pinsky, *Partial Differential Equations and Boundary-Value Problems with Applications*, Third Edition

Syllabus: The material covered in the course will include the solution of the heat equation, wave equation and Laplace's equation by separation of variables, the theory of Fourier series, the Fourier transform and its use in solving the heat equation and wave equation in unbounded regions. This material is in Chapters 0-2, 3.1 and 5.1-5.3.

There will be weekly homework assignments, a project, a portfolio, a midterm and a final exam.

The portfolio will contain selected problems from the homework and exams, redone to be completely correct and well written. When your portfolio is complete, it should give a clear picture of some of your major accomplishments in the course and why you consider these to be major accomplishments. The final portfolio will be due Monday, December 4, but you will be expected to submit preliminary versions of at least part of it earlier. Detailed instructions will be given out later.

The project will be due on Monday, November 20. Suggestions for projects will be handed out in early October.

The exams will be a combination of in-class and take-home, with the take-home part due at the time of the in-class exam. The midterm will be on Monday, October 9. The final exam will be on Monday, December 11 at 4:15.

Honor Code: The Honor Code is in effect for all exams, assignments and projects. You are encouraged to work together on the assignments and projects, but copying in any form or submitting work done by others as your own is a violation of the Honor Code.

Computers: Some of the assignments will require the use of Maple, Mathematica or Matlab. Maple will be used in classroom demonstrations. You

can find information about Maple and Maple demonstrations on the course web site

<http://www.nd.edu/~nancy/Math436/info.html>

Maple demonstration worksheets will also be in the afs course directory
/usr/local/courses/math/math436.01

Grading: The homework and midterm will each count for 20% of your grade, the portfolio and project will each count for 15%, and the final will count for 30%.

Assignment 1, due Wednesday, August 30:

p. 2, #2,4,5

p. 4, #2 (Note: The function should be $u(x, y) = e^{kx}e^{k^2y}$.)

p. 9 #1,3 (Note: In #1, the last condition should be $u_x(L; t) = 0$. In #3, the last term in the last condition should be $u(L; t)$.)

p. 10 #1-4

p. 13 #2,3

p. 17 #1,3

p. 21 #4

Future assignments will be posted on the course web site.