

Department of Mathematics – UNL
Fall 2011

Math 941 – Partial Differential Equations

Schedule: TuTh 11:00 – 12:15 Avery Hall 112

Office Hours: TuTh 12:30 – 2:00 or by appointment

Instructor: Petronela Radu, Avery Hall 239, 472-9130, pradu@math.unl.edu

Textbook: Partial Differential Equations by Lawrence Craig Evans (Graduate Studies in Mathematics), second edition

Course information: This graduate course offers an introduction to modern methods used in the study of partial differential equations. The material will deal with the main linear PDEs (the transport, Laplace, heat, and wave equations) and some of the nonlinear PDEs associated with them. We will also cover topics such as distributions, weak solutions, Sobolev spaces, and obtaining estimates of solutions to PDEs. The main problem for every PDE is to establish its well posedness, i.e. existence, uniqueness, and continuity of solutions with respect to initial data; we will see that each of these questions can be answered in more than one way depending on the topology in which we are working.

The course will cover material from Chapters 1- 5 from the textbook and some additional topics (such as distributions).

The prerequisites are Ordinary Differential Equations and some Real Analysis. Some introductory material from Measure Theory, Lebesgue Integration, and Functional Analysis will be offered throughout the course.

Evaluation: The grade is computed with the following formula:

30% Homework

30% Midsemester Exam

40% Final Exam

Additional references:

1. Partial Differential Equations by F. John
2. An Introduction to Partial Differential Equations by M. Renardy and R. Rogers
3. Lecture notes written by L. Tartar available at
<http://www.math.cmu.edu/cna/publications.html>

Department Grading Appeals Policy: The Department of Mathematics does not tolerate discrimination or harassment on the basis of race, gender, religion, or sexual orientation. If you believe you have been the subject of discrimination or harassment—whether in this or any other math course—please contact the department. If, for this or any other reason, you believe your grade was assigned incorrectly or capriciously, appeals may be made to (in order) the instructor, the department chair, the departmental grading appeals committee, the college grading appeals committee, and the university grading appeals committee.