Math 514 - Spring 2008
PDE II

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Office hours: Wednesday 12:30- 2 PM,
Monday 5 - 6:30 PM

Class meets M W F 10:10 AM - 11:00 AM in 106 MCALLISTER.

Course Description: This course is the second part in an introductory sequence in Partial Differential Equations, with emphasis on how to use concepts in applications. One of the principal aims of the course is to prepare you for the Qualifying Exam in PDE.

Prerequisites: You MUST have completed Math 513 to register.

Textbooks:
• Lawrence C. Evans, Partial Differential Equations, American Mathematical Society 2002 (required).

Excellent reference texts are:

Course topics: We will essentially cover Chapters 5 and 6 and 7 of Evans (Chapters 1, 2, 3 and parts of 4 were covered in Math 513). If time permits, we will also cover parts of Chapter 4 (not discussed in Math 513) and discuss some examples of nonlinear PDEs, such as the Navier-Stokes equations of Fluid Mechanics.


2. 2nd-order linear elliptic equations: examples, weak and strong solutions, Lax-Milgram Lemma and well-posedness, maximum principle, systems, eigenfunctions.

3. 2nd-order linear evolution equations: examples, weak solutions, well-posedness, propagation.
Comments: I welcome questions both during and outside class. ALL questions are very useful to both the instructor and the students. I also welcome general feedback about the course. An anonymous feedback form is available on the course web page.

Assignments. There will be homework assigned biweekly, one in-class midterm, and a comprehensive final exam. Homework assignments and handouts will be posted on the course web page.

The midterm is tentatively set for Friday March 7.

Grading: Grades will be based on a 10-point scale (for example, A=90%, B=80%). The final grade, an overall assessment of your performance in the course, may be curved.

- HOMEWORK: 50 %;
- MIDTERM: 20%;
- FINAL: 30%.

Policies: Collaborations on homework problems is allowed and encouraged. NO collaboration is allowed during in-class tests.

NO LATE HOMEWORK will be accepted and there will be NO MAKE-UP EXAMS, unless for documented and valid reasons, such as illness. In this case, you must inform me IN ADVANCE of the test.

Academic Integrity: "Academic dishonesty includes, but is no limited to, cheating, plagiarizing, . . ., facilitating acts of academic dishonesty by others, having unauthorized possession of examinations, submitting work of another person or work previously used without informing the instructor, or tampering with academic work of other students. . . . A student charged with academic dishonesty will be given oral or written notice of the charge by the instructor. If students believe that they have been falsely accused, they should seek redress through informal discussions with the instructor, the department head, dean or campus executive officer. If the instructor believes that the infraction is sufficiently serious to warrant the referral of the case to Judicial Affairs, or if the instructor will award a final grade of F in the course because of the infraction, the student and instructor will be afforded formal due process procedures.” From Policies and Rules, Student Guide to the University Policy 49-20.

Based on the University’s Faculty Senate Policy 49-20, a range of academic sanctions may be taken against a student who engages in academic dishonesty.