Math 352/652, Spring 2010

Dr. Sarah Raynor

Textbook: Partial Differential Equations: An Introduction, Second Edition, Walter A. Strauss, ISBN 978-0470-05456-7.

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Office Hours: Mondays, Tuesdays, and Thursdays from 3-4pm, or by appointment.

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Course: This course is a first course in partial differential equations. **It has as its prerequisites a course in multivariable calculus (Math 113) and a course in ordinary differential equations (Math 251).** Partial differential equations are differential equations with multiple independent variables, so it is particularly important that your understanding of partial derivatives and gradients be solid. The field of partial differential equations is a very active one which is closely related to physics, and also has major applications in biology, chemistry, and finance, among other fields. However this is a math course, and we will be covering the rigorous underpinnings and proofs in the subject as well. In this course we will be covering the starred sections of the first 6 chapters in the book. The material comprises Fourier series and a study of the three most important partial differential equations: Laplace's equation, the heat equation, and the wave equation. You will also be completing a project that will give you an opportunity to study a related topic of your choice in greater depth.

Homework: There will be no graded homework in this course. However, I will suggest problems from the book for every section that we discuss, and I expect that you will attempt to complete them to the best of your ability. I will be available to discuss these problems outside of class, and I also encourage you to discuss them with your classmates. I may occasionally ask you to be prepared to discuss a particular question or problem in class.

There will be take-home quizzes roughly every two weeks that will be based mainly on the assigned homework, but may have other problems as well.

Tests: The course will have two in-class exams. The tentative dates of the exams are **Monday, February 15 and Friday, March 26**. You must contact me by January 27 if you have any university-approved conflicts with these dates. Otherwise, you may miss the exam only in the case of serious illness or emergency. The couse will have a final exam at **2:00pm on Wednesday, May 5**.

Projects: Each student will be expected to write a report on a topic not covered in class. The report should be about 10 written pages, not including diagrams. There is no limit to the number of diagrams you may include. You will also be expected to present a 15-minute report on your project in class. A complete description of the project, including possible topics and deadlines, is available on the course webpage. You may work in pairs, or alone, as you choose.

Evaluation: There are 4 components of your final grade:

1. The take-home quizzes taken together will be worth 15% of your grade.

2. There will be two in-class midterms, each worth 15% of your grade.

3. The written report and oral presentation of your project will be worth 20% of your grade.

4. There will be a cumulative final exam worth 30% of your grade. The final exam is scheduled for Thursday, May 4 at 2:00pm.

5. Your positive class participation will be worth 5% of your grade.

 Important Note for Graduate Students: Students enrolled in Math 652 will be held to a higher standard. As appropriate, this expectation will be reflected in course topics, problem sets, quizzes, projects, exams, and grades.