MAT 461 (Partial Differential Equations)
Syllabus for Fall 2007
Tu/Th 11:10 - 12:25 in AMB 146 (Section 1, Class number 5398)

Instructor Information

Instructor: Dr. Jim Swift  Adel Math Bldg. 110  523-6878  Jim.Swift@NAU.edu

Office Hours: MWF 10:30-11:30, Tu 2:00-4:00. If these times are inconvenient, you can make an appointment, or drop by my office any time.

Websites: www.nau.edu/Jim.Swift is my web site. Follow the “Teaching” link. On the instructor information page, there is a link to the web site for this class, as well as a link to official U.S. time, http://www.time.gov, that our class will observe.

Course Description


Prerequisite: A grade of C or better in MAT 239 (Ordinary Differential Equations) and MAT 316 (Linear Algebra).

Content: I would like to cover chapters 1 through 7 of the text. Realistically, we will not be able to do this, so I will skip many of the sections. My goal is that you understand how PDEs represent real world problems, and know how to use some of the basic techniques available to solve them. The main techniques are separation of variables and Fourier series. You should get an acquaintance with some of the special functions that are useful in various geometries. I will teach you the basics of numerical techniques, an important topic that is often omitted from a course like this.

Basis of Evaluation

Class Points: There are 700 class points (plus extra credit). Letter grades are assigned with the scale 90% = A, 80% = B, 70% = C, and 60% = D.

Midterms: (2 × 100 = 200 points) There will be 3 midterm exams. All of the midterms count. Note that the math/stat department has permission to give an exam during End of Semester Week (formerly known a Reading Week).

Homework: (150 class points.) It is necessary to practice math to learn it. I will assign homework regularly and collect it. A few problems will be graded and you will get a score for each assignment. You are allowed and encouraged to work together on homework.

Project: (100 class points.) A typical project would be a paper describing a problem, a PDE model for the problem, a strategy for solving the PDE numerically, and a summary of your results. You will give a 15 minute presentation to the class.

Final Exam: (250 class points) The Final Exam will be comprehensive. It is scheduled for Thursday, December 13, from 10:00 to 12:00 in our usual classroom.

Extra Credit: At each midterm exam I will give you 3 points if you had no unexcused absences since the previous exam, and I will give you 2 points if you turned in all the homework in that period. Any points that you get for the Problem of the Week will be credited to this class.