Syllabus – Math 512 Spring 2005 - Section 58244 - TR 9:40-10:55, Ayres 309A

Course Information:

In this course we will study the fundamental ideas and techniques of mathematics associated with continuous models of physical, engineering and other systems. In contrast to the typical 'methods' course, in this course we will first derive the various ordinary and partial differential equations before we develop the techniques to solve them.

The main focus will be on differential equations, both ODEs and PDEs. We will study the basic theory, some solution techniques involving substitution and transforms, and the stability of the solutions. As time permits we will also look into different transforms (Fourier, wavelet, etc.) and time-series analysis.

The prerequisites for this course are: Multi-variable calculus and analysis, and some linear algebra. Some experience with basic differential equations and some computer skills would help but is not absolutely necessary.

Resources:

- There is no official text for this course. I do recommend that you get some basic texts on ordinary and partial differential equations. The texts used at UT for 231 or 431 and 435 are fine (authors: Boyce & dePrima for ODE, Haberman for PDE). Some inexpensive alternatives:


- Web-page: http://www.math.utk.edu/~ccollins/M512 I’ll put copies of all handouts and assignments here as well as a class schedule.

Grading:

- Homework (65%). There will be regularly assigned homework. Some will be short calculation type and other will involve more of the modeling process.
- Group Project (10%). Details of project to be handed out later.
- Final Project & Presentation (25%). Detail and presentation schedule will be handed out later.

Instructor:

Charles Collins - 312B Ayres Hall - 974-4269 or 974-2461 - ccollins@math.utk.edu
Office Hours: TWR 2-3 and by appointment
University’s Honor Statement:

“An essential feature of the University of Tennessee is a commitment to maintaining an atmosphere of intellectual integrity and academic honesty. As a student of the University, I pledge that I will neither knowingly give nor receive any inappropriate assistance in academic work, thus affirming my own personal commitment to honor and integrity.”

Plagiarism:

“Students shall not plagiarize. Plagiarism is using the intellectual property or product of someone else without giving proper credit. The undocumented use of someone else’s words or ideas in any medium of communication (unless such information is recognized as common knowledge) is a serious offense, subject to disciplinary action that may include failure in a course and/or dismissal from the university. (from Hilltopics Student Handbook 2004-05, page 11)

For this class, this means that

1. You must document any homework solutions you get from other sources (book, web, etc.). To document means to give the title, author and page number or web address. This should be at the beginning of your solution write up. You should also document when you get the main idea for the solution from another written resource or use a major theorem or result that is not in our primary text. You do not have to document results from our primary text.

2. Your written work must be your own. You may discuss homework problems with other students, but only in a fairly general way. You may not share written solutions. So once you start writing up your solution, do not discuss or share it with another student. It is as much of an offense to let someone copy your work as to copy someone’s work.

If there is an obvious violation of these policies, you will receive a 0 on the problem (1st offense), 0 on the homework set (2nd offense), or 0 in the course and report to the administration (3rd offense). If there are signs that such activity is going on (like too similar notation, examples, arguments or mistakes), I will give a warning (once).