Math 4263 - Partial Differential Equations

Syllabus - Spring 2011

Instructor:	Dr. Birne Binegar 430 Mathematical Sciences Tel. 744-5793 Email: binegar@math.okstate.edu Office Hours: MW , 2:30 - 3:30 , MS 430
Lectures:	MWF , 1:30 - 2:20 , LSE 215
Text:	*Partial Differential Equations: An Introduction*, by Walter A. Strauss, John Wiley & Sons (2008) ISBN: 97800470-0546-7
Prerequisites:	Ordinary Differential Equations and Vector Calculus
Course Objectives:	The theory of partial differential equations will be developed by a systematic study of relatively simple yet important examples. Special emphasis will be placed on techniques of solution and boundary value problems.
Homework:	Homework will be assigned **daily**, and it is expected that a student work out a day's assignment **before** the next lecture. All the homework assigned during a given week will be due at the beginning of the first class of the following week.
Examinations:	There will be one midterm examination worth 100 pts and one final examination worth 200 pts.
Grades:	Grades will be determined exclusively from homework, midterm and final exam scores.

1 Midterm Examination	100 possible pts.
Homework	100 possible pts.
Final Examination	200 possible pts.
	400 possible pts.

N.B. The final exam will be held 2:00 - 3:50 , Wednesday, May 4 in LSE 215.
Letter grades will be assigned as follows:

A:	360	-	400 pts.
B:	320	-	359 pts.
C:	280	-	319 pts.
D:	240	-	279 pts.
F:	0	-	239 pts.

Math 4263: Intro to PDEs
Sequence of Topics

1. First Order Linear PDEs
2. Characteristics and First Order Equations
3. Second Order Linear PDEs
4. The Wave Equation
5. The Wave Equation
6. Reflections off a Boundary
7. The Wave Equation with a Source
8. The Heat Equation
9. The Heat Equation
10. Maximum Principle and Uniquenes
11. Separation of Variables and Fourier Series
12. Fourier Series, Cont'd
13. Midterm
14. Sturm-Liouville Theory
15. Sturm-Liouville
16. Examples
17. Laplace's Equation
18. Laplace's Equation on a Disc
19. Distributions
20. Green's Identities and Green's Functions
21. Numerical Methods - Divided Differences
22. Finite Element Method
23. Laplace Transform Method