Math 4263 - Partial Differential Equations

Syllabus - Summer 2015

Instructor:	Dr. Birne Binegar 430 Mathematical Sciences Tel. 744-5793 Email: binegar@okstate.edu Office Hours: TTh , 3:45 - 4:30, North Hall 367A, OSU Tulsa
Lectures:	TTh , 4:30 - 7:10 , North Hall 212, OSU Tulsa
Course URL:	http://lie.math.okstate.edu/~binegar/4263/4263.html
Text:	*An Introduction to Partial Differential Equations*, by Y. Pinchover and J. Rubinstein, Cambridge Univ. Press (2005) ISBN: 978-0521613231
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 175 pts.
Grades:	Grades will be determined exclusively from homework, midterm and final exam scores.

1 Midterm Examination	100 possible pts.
Homework	50 possible pts.
Final Examination	150 possible pts.
	300 possible pts.

Letter grades will be assigned as follows:

A:	270	-	300 pts.
B:	240	-	269 pts.
C:	210	-	239 pts.
D:	180	-	209 pts.
F:	0	-	179 pts.

Math 4263: Intro to PDEs
Sequence of Topics

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