Math 241 Calculus IV

Summer 2013 Session II

Instructor: Tong Li

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Prerequisite: Math 114. We will frequently use various techniques of integration, including integration by parts, partial fractions, u-substitutions, trigonometric substitutions and trigonometric formulas. Also I expect you to have some basic knowledge about ordinary differential equations. It's better if you are familiar with complex numbers and vector calculus as well.

Textbook: Richard Haberman: *Applied Partial Differential Equations with Fourier Series and Boundary Value Problems (5th Edition)*

When and Where: MTWR 1:00-3:10pm, DRL 3C8

Office Hours: DRL 3N2B, MW 3:30-4:30pm, or by appointment.

Website: http://www.math.upenn.edu/~litong/

Grading:

Homework (35%): We have 5 homeworks, due by Monday classes starting from the second week.

Midterm (30%): We have 2 midterms, and I will drop the lower one.

Final (35%): The final exam will be 2 hours, in-class, and will cover the entire course.

Late Homework Policy:

Within 1 day late will receive up to 70%

Within 1 week late will receive up to 40%

Over 1 week late will receive a 0.

Test Policy: Calculators or other electronic devices are NOT allowed on any exam. You may use a regular size sheet of paper with formulas on both sides. If you miss any of the exams and want a make-up exam, please contact me as early as possible.

This May Be Helpful: The Math Help Sessions for Summer II are being held Monday through Thursday from 9am to 1pm. The sessions are being directed by Matthew Wiener and are located in 4C6 DRL

Calendar:

Date	Topic	Text
Week 1		
07/01	Introduction, PDE, Derivation of 1D Heat Equation	1.1, 1.2, 1.3
07/02	Heat Equation and Laplace Equation in Higher Dimensions	1.4, 1.5
07/03	Method of Separation Variables	2.1, 2.3
07/04	No Class	
Week 2		
07/08	Fourier Series	3.1, 3.2, 3.3
07/09	Solving 1D Heat Equation with Finite Ends	2.3, 2.4
07/10	Solving 2D Laplace Equation in a Rectangle or a Disk	2.5
07/11	Wave Equation	4.1, 4.2, 4.3
Week 3		
07/15	Midterm 1	Chapter 1-3
07/16	Vibrating String and Membranes	4.4, 4.5
07/17	Strum-Liouville Eigenvalue Problems	5.1, 5.2, 5.3
07/18	Large Eigenvalues and Approximation Properties	5.4, 5.9, 5.10
Week 4		
07/22	Fourier Transform	10.1, 10.2, 10.3
07/23	Solving Heat Equations on an Infinite Domain	10.4, 10.5, 10.6
07/24	PDE's in Higher Dimensions	7.1, 7.2
07/25	Vibrating Membranes Revisited	7.3, 7.7
Week 5		
07/29	Midterm 2	Chapters 4,5,10
07/30	Laplace's Equation on a Circular Cylinder	7.9
07/31	Laplace's Equation Inside a Spherical Cavity	7.10
08/01	Nonhomogeneous Problems	8.1, 8.2, 8.3
Week 6		
08/05	Numerical Methods 1	6.1, 6.2, 6.3
08/06	Numerical Methods 2	6.4, 6.5, 6.6
08/07	Review	
08/08	Final Exam	