

MATH 302
Partial Differential Equations
Fall semester 2013

Lectures: Room: XiaYuan 411, MW 8:00-9:40 am
Instructor: Prof. Ya-Guang Wang **email:** ygwang@sjtu.edu.cn
Office: Math Building 1306 **phone:** 54747313
Office Hours: W 3:00 - 5:00pm (temporarily) and by appointment
Text: *An Introduction to Partial Differential Equations, Cambridge Univ. Press 2005,*
by Yehuda Pinchover & Jacob Rubinstein
Partial Differential Equations (3rd edition, in Chinese), Higher Education Press 2012,
by Guo Chaohao, Li Daqian, Chen Shuxing, Zheng Songmu & Tan Yongji

Course Content:

1. Chapter One: Introduction (Several typical examples of PDEs: transport equations, wave equations, heat equations, Laplace equations; Differential operators and the superposition principle)
2. Chapter Two: Transport Equations (the method of characteristics), the first order linear PDEs in one space variable
3. Chapter Three: Wave equations (Cauchy problem of wave equations in one space variable, progressing waves, Cauchy problems for wave equations in two and three space variables, Huygens Principle, finite speeds of propagation; The initial-boundary value problems for one-dimensional wave equations, the method of separation of variables, energy method)
4. Chapter Four: Heat equations (the initial-boundary value problems for one-dimensional heat equations, Cauchy problem, the Fourier transform method, maximal principles)
5. Chapter Five: Laplace equations (Green functions, maximal principles)
6. Chapter Six: Characteristics, Classification of equations
7. Chapter Seven: Introduction of nonlinear PDEs (Burgers equations, shock waves)

Grading Policy: There will be a midterm (20pt of Final Score), a Final (50pt of Final Score), two quizzes (each one will be 10pt of Final Score), and the homework will be counted as 10pt of Final Score.

Reading Assignments: Each student is expected to come to class prepared by reading the assigned section before the class meeting.

Make-up Policy: There will be no **Make-Up** for Quizzes, Midterms and Final in general.

Academic Dishonesty: All cases of suspected dishonesty in my courses will be immediately referred to the Zhiyuan College and University.