

MATH4220
PARTIAL DIFFERENTIAL EQUATIONS
2016/2017 2nd term

Lecturer: Professor Zhouping Xin

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Objectives:

First-order PDEs, Wave Equation, Diffusion Equation, Laplace Equation, Boundary-value Problems and Initial-boundary-value Problems, Well-posedness, Maximum Principle, Energy Methods, Method of Separation Variables, Eigenvalue Problems, Fourier Series, Green's Function

Text Book: Walter A. Strauss, Partial Differential Equations, An Introduction, John Wiley & Sons, Inc., 1992

Prerequisite:

- Simple ODEs (1st order and 2nd order ODEs)
- Multivariable Calculus (Integration by parts, Green's Identity, Stokes Formula, Gauss Formula, etc.)
- Some linear algebra and mathematical analysis

Additional References:

- H.F. Weinberger, A First Course in Partial Differential Equations, Blaisdell, Waltham, Mass., 1965.
- D. Bleecker and G. Csordas, Basic Partial Differential Equations, International Press, 1996.

Syllabus and Teaching Scheme

The following sections in the text book will be covered:

Chapter 1, 1.1-1.6

Chapter 2, 2.1-2.5

Chapter 3, 3.1-3.5

Chapter 4, 4.1-4.3

Chapter 5, 5.1-5.4, 5.6

Chapter 6, 6.1-6.3

*Chapter 7, 7.1-7.4 (dependent on time)

*Chapter 11, 11.1-11.3 (optional)

Assignments:

There will be 5 to 9 assignments (will be given in class), two of which have to be handed in (though you are strongly encouraged to do all of them). Your TAs will answer questions from the homework.

Quiz: There will two quizzes.

Midterm: Around the 8th week.

Final Exam: One

Assessment Scheme:

2 Homework	10%
2 Quizzes	10%
Midterm Exam	30%
Final Exam	50%
Total	100%

Office Hour:

Every Tuesday & Thursday: 3:30pm to 4:30pm, or to make an appointment by email.