

**MATH4220**  
**PARTIAL DIFFERENTIAL EQUATIONS**  
**2015/2016 2nd term**

**Lecturer: Professor Zhouping Xin**

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**Objectives:**

First-order PDEs, Wave Equation and Diffusion Equation on a line, Boundary value Problems, Method of Separation Variables, Eigenvalue Problems, Laplace Equation, Maximum Principle, Energy Methods, 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 ODEs)
- Multivariate calculus (Integration By Parts, Green's Identity, Stokes Formula, Gauss Formula)
- Some 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

We will cover the following sections.

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.

Chapter 6, 6.1-6.3

Chapter 7, 7.1-7.4

(Optional) Chapter 11, 11.1-11.3

### Assignments:

There will be 5 to 9 assignments. (I will hand out them in class)

You need to turn in 2 assignments (I *STRONGLY* suggest you do **ALL** of them).

Your TA will answer questions from the homework.

Every 6 weeks there will be a quiz.

Midterm: 8th Week.

One final examination is scheduled.

### Assessment Scheme:

Final Examination	1	50%
Midterm Examination	1	30%
2 Quizzes	2	10%
2 Homework	2	10%
Total		100%

### Office Hour:

Every Tuesday & Thursday: 3:30pm to 4:30pm, or by sending me an e-mail to make appointment.

### Final Remark:

Any questions? Please send me an email or drop by my office AB1 701.