偏微分方程導論

INTRODUCTION TO
PARTIAL DIFFERENTIAL EQUATIONS

NTHU | MATH 4280 | 2024 Spring

課程安排 Arrangements

教師：陳國璋 Kuo-Chang Chen
時間：M34R34
教室：綜三115
助教：劉振宏

聯繫方式 Contact Info.

教師辦公室：綜三609
分機：33067
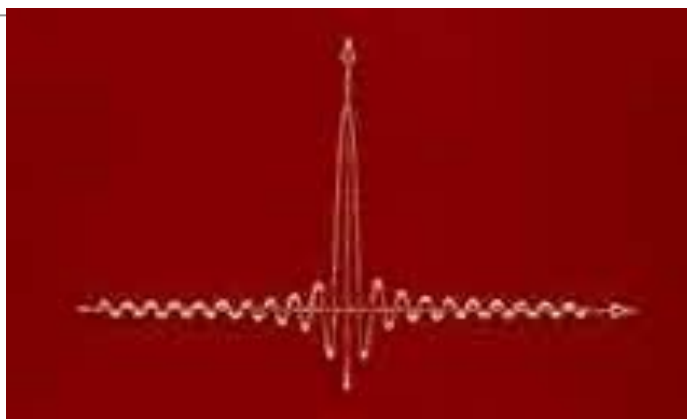辦公室時間：T78
email: kchen@math.nthu.edu.tw
助教將建立Line群組以便聯繫，
加入方式於課堂宣布

教科書 Textbook

Walter Strauss: *Partial Differential Equations, An Introduction,* Second Edition, 2008

參考書 References

Lawrence C. Evans: *Partial Differential Equations*, Second Edition (Graduate Studies in Mathematics Vol 19) 2nd Edition, American Mathematical Society, 2010.

課程簡介 Course Description

This course is an introduction to the theory of partial differential equations intended for students majoring in mathematics. Our aim is to introduce basic concepts and techniques of partial differential equations. Throughout the course we will illustrate by some important mathematical models for problems from physics, such as wave propagation, diffusion, potential theory, heat transfer, etc. Students registering to this course should have some background knowledge on advanced calculus, linear algebra, and elementary differential equations.

Topics to be covered include:

1. Where PDEs come from
2. Waves and Diffusions
3. Reflections and Sources
4. Boundary Problems
5. Fourier Series
6. Harmonic Functions
7. Green's identity and Green's Function

評分方式 Grading

作業 Homework 20%
Some problems from homework assignments will be collected and graded. Recitations (optional) are discussions of homework assignments.

期中考 Midterm
2024/4/18 Chapters 1,2,3,4

期末考 Final Exam
2024/06/17 Chapters 5,6,7

計分方法一：
作業20%、期中考40%、期末考40%

計分方法二：
期中考、期末考各佔50%

出席與缺席 Attendance

Students are expected to attend every scheduled class. It is the student's responsibility to keep informed of any announcements, syllabus adjustments or policy changes made during scheduled classes.

You should miss an exam only for the most compelling reasons and you should obtain permission in advance, except in some extraordinary circumstances. If you miss an exam for legitimate reasons, then a make-up exam will be arranged.

課程大綱 Syllabus

There will be a total of 23/24 lectures, 6 recitation classes, each of them will be 2 hours long. They are scheduled as follows.

週次	週一	進度	週四	進度
1	2/19	Chapter 1	2/22	Chapter 1
2	2/26	Chapter 1	2/29	Chapter 2
3	3/04	演習課	3/07	Chapter 2
4	3/11	Chapter 2	3/14	Chapter 2
5	3/18	Chapter 3	3/21	演習課
6	3/25	Chapter 3	3/28	Chapter 4
7	4/01	Chapter 4	4/04	清明節放假
8	4/08	Chapter 4	4/11	演習課
9	4/15	Chapter 5	4/18	期中考
10	4/22	Chapter 5	4/25	Chapter 5
11	4/29	Chapter 5	5/02	演習課
12	5/06	Chapter 5	5/09	Chapter 6
13	5/13	Chapter 6	5/16	Chapter 6
14	5/20	演習課	5/23	Chapter 6
15	5/27	Chapter 7	5/30	Chapter 7
16	6/03	(Chapter 7)	6/06	演習課
17	6/10	端午節放假	6/13	溫書假
18	6/17	期末考		