常微分方程一

ORDINARY DIFFERENTIAL EQUATIONS (I)

NTHU | MATH 5250 | 2025 Fall

課程安排 Arrangements

教師：陳國璋 Kuo-Chang Chen
時間：R567
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：T8F8
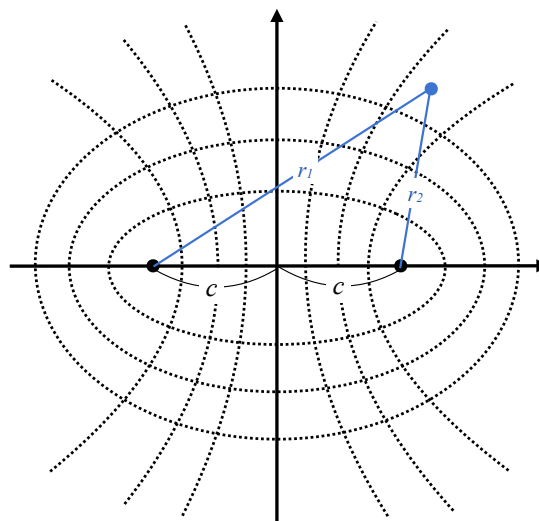email: kchen@math.nthu.edu.tw
助教將建立Line群組以便聯繫，
加入方式於課堂宣布

教科書 Textbook

S.B. Hsu, K.C. Chen: *Ordinary Differential Equations With Applications,* 3rd edition, World Scientific, 2022.

參考書 References

Vladimir I. Arnold, *Ordinary Differential Equations*, Universitext, Springer, 1992.

E. A. Coddington, N. Levinson: *Theory of Ordinary Differential Equations*, McGraw Hill, 1984.

課程簡介 Course Description

Ordinary differential equations has wide applications in all areas of natural science, social science, and is fundamental to other areas of mathematics, such as partial differential equations, geometry, and probability. This is a year-long course intended for graduate and advanced undergraduate students who have taken standard undergraduate courses for differential equations, linear algebra, and complex analysis. Topics to be covered in the fall semester include:

1. Fundamental theory

2. Linear systems

3. Local stability of nonlinear systems

4. Method of Lyapunov functions

評分方式 Grading

作業 Homework
Selected exercises from the textbook. Some of them will be collected and graded.

期中考 Midterm (Chap 1~3)
2025/10/30

期末考 Final Exam (Chap 4, 5)
2025/12/18

計分方法：
作業**20%**，期中考、期末考各佔**40%**

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 14 lectures, two exams. Each lecture and exam will be 3 hours long. They are roughly scheduled as follows.

週次	日期	進度	備註
1	9/4	Chap 1. Introduction	
2	9/11	Chap 2. Fundamental theory	
3	9/18	Chap 2. Fundamental theory	
4	9/25	Chap 2. Fundamental theory	
5	10/2	Chap 2. Fundamental theory	作業
6	10/9	Chap 3. Linear systems	
7	10/16	Chap 3. Linear systems	
8	10/23	Chap 3. Linear systems	作業
9	10/30	期中考	
10	11/6	Chap 4. Nonlinear systems	
11	11/13	Chap 4. Nonlinear systems	作業
12	11/20	Chap 4. Nonlinear systems	
13	11/27	停課	
14	12/4	Chap 5. Lyapunov method	
15	12/11	Chap 5. Lyapunov method	作業
16	12/18	期末考	

Classes will be held from (80+80 min):
13:20-14:40, 15:00-16:20.