EE 202000 Partial Differential Equations and Complex Variables (偏微分方程與複變函數)

Spring 2008
Information Sheet

Lecturer: Prof. Shang-Da Yang (楊尚達)
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Course website: http://www.ee.nthu.edu.tw/~sdyang/Courses/PDE.htm
Class time: M7M8, R6
Office hours: Thursday 3-4 PM, EECS 512
Head of TAs: 何昇儒, san12345pump@msn.com, Tel: 0918301407, NTHU ext. 34178
TA hours: Tuesday 7-9 PM, public area of EECS 2F

■ Textbook & Reference
1. E. **Kreyszig**, *Advanced Engineering Mathematics*, 9th Ed., John Wiley & Sons, 2006.
2. S. -D Yang, *Lecture Notes*, pdf files are available on the course website.
3. Stanley J. **Farlow**, *Partial Differential Equations for Scientists and Engineers*, Dover Publications, 1993 (optional).

■ Syllabus:
1. Introduction, modeling of 1-D wave equation (3 sessions: 2/18, 2/21, 2/25)
2. Method of separation of variables, D'Alembert's solution for traveling waves, Sturm-Liouville problems (3 sessions: 2/25, 3/3)
3. Heat equation with different boundary conditions (3 sessions: 3/6, 3/10)
4. Solving nonhomogeneous PDEs (2 sessions: 3/13, 3/17)
5. Solving PDEs by integral transforms (3 sessions: 3/17, 3/20, 3/24)
6. 2-D wave equation in Cartesian and polar coordinates (3 sessions: 3/24, 3/27, 3/31)
7. Laplace's equation in Cartesian, polar, and spherical coordinates (4 sessions: 3/31, 4/7, 4/10)
8. Midterm (4/17 evening)
9. Complex numbers and functions, Cauchy-Riemann equations (4 sessions: 4/14, 4/21)
10. Complex integration (3 sessions: 4/24, 4/28)
11. Complex power & Taylor series (4 sessions:, 5/1, 5/5 停課, 5/8 停課, 5/12, 5/15)
12. Laurent series & residue (4 sessions: 5/19, 5/22, 5/26)

13. Applications: real integrals by residual integration, potential theory (5 sessions: 5/26, 5/29, 6/2, 6/5)
14. Final exam (6/9)

■ Grading Policy & Comments:
1. Homework (**30%**): Once in every two lessons. It will be collected at the **beginning** of the class on the due date. Delayed submission will not be counted.
2. Midterm (**30%**): Tentatively scheduled on **4/17**, covering Ch12 of the textbook.
3. Final exam (**40%**): Covering all topics (Ch13−Ch18 of the textbook) of this semester. Tentatively scheduled on **6/9**.
4. Do not give up: you can pass if the score of final exam is higher than the "class average".
5. Bonus points: Properly answering one bonus question in class may earn **1-3** points of semester score. Presence & thinking are encouraged.
6. Skip advanced topics marked with asterisk (*) in the lecture notes if you have no time.