Engineering Mathematics (工程數學)

Term:
Fall 2020

Credits:
3

Offering Department:
Computer Science and Information Engineering

Lecture Hours:
Friday 13:25 - 16:10

Lecture Location:
2705

Course Objectives
The aim of this course is that let students have basic mathematical capability in EM waves, communications, control, photonics and solid-state electronics. And then the students can easily utilize mathematical method to analyze problems and carry on researches. Its contents include the 1storder ordinary differential equations, the 2nd order ordinary differential equations, Laplace transform, Fourier analysis, series solution of ordinary differential equations, partial differential equations, vector analysis, system theory, calculus of variation, difference equations, complex numbers & functions, complex integration, complex series, conformal mapping, and special functions.

Instructor:
Prof. Kuan-Hsien Liu (劉冠顯)
Office: 6418
Office Hours: Tuesday 3:00pm – 4:00pm or by appointment
Email: khliu@nutc.edu.tw
Phone: 04-22196320

Teaching Assistant:
TBD
Office Hours:
Office:
Email:

Textbooks
Required:
E. Kreyszig, “Advanced Engineering Mathematics”, 10th edition, John Wiley & Sons, Inc., 2011.

Suggested:

書 名: 高等工程數學(上)(第十版) / 作者: 江大成、陳常侃、江昭皚、黃柏文 譯 / 出版書局:全華圖書. 出版日：2012/6/4.

Grading

- **Attendance**: (10% of final grade)
- **Homework:** 4 homeworks over the semester (20% of final grade)
- **Midterm:** 2 hours in class around November 20, 2020. (35% of final grade)
- **Final Examination:** 2 hours on January 15, 2021. (35% of final grade)

Homework assignments must all be turned in at the beginning of class on the day they are due. For every day (or portion of a day) an assignment is late, 25% will be subtracted from its maximum point total. You may discuss strategies for solving the homework with your classmates. But please do your own homework.
All exams are closed book.

Course Outline

Week	Content
1	Introduction and Review
2	First-Order ODEs (Chapter 1)
3	First-Order ODEs (Chapter 1)
4	First-Order ODEs (Chapter 1)
5	Second-Order Linear ODEs (Chapter 2)
6	Second-Order Linear ODEs (Chapter 2)
7	Second-Order Linear ODEs (Chapter 2)
8	Second-Order Linear ODEs (Chapter 2)
9	Midterm (**Midterm on the above material**)
10	Series Solutions of ODEs. Special Functions (Chapter 5)
11	Series Solutions of ODEs. Special Functions (Chapter 5)
12	Series Solutions of ODEs. Special Functions (Chapter 5)
13	Laplace Transforms (Chapter 6)
14	Laplace Transforms (Chapter 6)
15	Laplace Transforms (Chapter 6)
16	Laplace Transforms (Chapter 6)
17	Laplace Transforms (Chapter 6)
18	Final Exam (**Final covers the whole course, but with an emphasis on topics Ch.5 & Ch.6)**