



國立清華大學

10120 EE 214001 電磁學

課程大綱

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課程說明

本課程旨在以嚴謹之數學公式，解釋靜電、穩態電流、靜磁、電磁交互作用等實驗現象。並且據以上之數學關係，推導出馬克士威方程組 (Maxwell's equations)，並從而擴展至對電磁平面波及傳輸線行為的探討。本課程對後續學習電磁波、光電工程、光電子學、固態電子元件至關重要。

需要的背景知識：微積分(一二)、普物(一二)、電路學、傅立葉轉換。

※ 這是一門需要大量心力與時間投入的課程。課前預習、課後複習、隨時跟上進度是絕對必要的！

教學方式: 板書搭配投影片。中文授課。

教科書:

D. K. Cheng, *Field and Wave Electromagnetics*, 2nd edition, Addison Wesley, 1989.

參考書籍:

Transmission line: F. Ulaby, E. Michielssen, and U. Ravaioli, *Fundamentals of Applied Electromagnetics*, 6th edition, Pearson, 2010.

輔助教材: <http://lms.nthu.edu.tw>

授課內容:

- Introduction and Transmission line
- Basics of vector analysis
- Static electric fields and steady electric currents
- Static magnetic fields
- Maxwell's equations and Plane-wave propagation



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評量方式:

作業[拒收遲交] (20%)

小考 (25%)

第一次期中考 (15%)

第二次期中考 (20%)

期末考(20%) 暫定 6/17

Ethics policy:

As a student of NTHU, you are here to learn.

1. You should always bear honor and confidence in your mind. You should be responsible for your own grade and in a longer term, your future. You can start by finishing your own class assignments.
2. Plagiarism in any form is unacceptable. The plagiarist will receive a (-100)% for that assignment. I do, however, encourage discussions among classmates.
3. Misconducts during examinations will result in failure of this course.
4. Overly active club participation makes no excuse for late homework and/or missing exams.