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EE214000 Electromagnetics, Fall, 2017

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## EE 214000 Electromagnetics

國立清華大學電機工程科學系  
Fall, 2017

Prof. 黃衍介

Class location: Delta 209  
Class schedule: M3M4W2

Office hours @ Delta 515: 10:10 am - noon, Wednesday.

Teaching Assistants (TAs): 蔡偉哲(c2682312@gmail.com) 、郭育豪  
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### General Information

This course is to introduce the basic concepts on electromagnetics, covering topics of transmission line, electrostatics, magnetostatics, time-varying field, plane waves etc. To be consistent with the modern trend of electrical engineering, I bring forward the transmission line to beginning of the lecture.

The textbook chosen for this course is Field and Wave Electromagnetics by D. K. Cheng. As electromagnetics is a well-established knowledge, most other textbooks also serve well for the purpose of this course. For example, the content of transmission line is mostly adopted from the textbook by Ulaby. However, the same concepts are also given in the textbook by Cheng.

This course will be lectured mostly in English and slightly in Chinese for clarity.

### Textbook

David K. Cheng, Field and Wave Electromagnetics 2nd Ed., Addison Wesley, 1989.

### Reference book

Fawwaz T. Ulaby, Fundamentals of Applied Electromagnetics 6<sup>th</sup> Ed., PEARSON Prentice Hall, 2007. (新月圖書，東華書局代理)

### Grading Policy:

|   |                                      |
|---|--------------------------------------|
| Homework (pre- and post-class homework) | 10% x 2 (late homework not accepted) |
| Weekly quiz (open books/notes)*         | 20%                                  |
| Two midterm exams                       | 20% x 2                              |
| One final exam                          | 20%                                  |

\* In each Monday class, each student has to submit a pre-class homework. Please select 3 questions of your choice and answer them from the review questions listed in the end of each chapter of the textbook by D. K. Cheng. The questions have to be those **to be lectured** and can't be those already lectured.

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- \* weekly quiz includes those lectured, **to be lectured**, or assigned in homework.
  - \* In case we need to adjust scores in the end of the semester, your performance in quiz, question asking/answering in the class, and pre-class homework will become the weighting factor for the adjustment.

**Course Handouts:** Bound copies will be available at 利捷影印店 on the 2<sup>nd</sup> floor of 水木餐廳 in the first week of class . Updates can be found on <http://www.hope.nthu.edu.tw/Electromagnetics.html> ( passcode: EE214000 ) .

### Course Contents

Introduction, transmission line, vector calculus, electrostatics, magnetostatics, time-varying field, electromagnetic waves, EM wave at boundaries, radiation and antenna (if time allows).

### Handout Reading Assignments (scope of in-class quiz)

- Week 1 (Sep. 11): up to page 19 (announcement)
- Week 2 (Sep. 18) : up to page 36
- Week 3 (Sep. 25): up to page 55
- Week 4 (Oct. 2): up to page 68 (no class on Wed., Oct. 4)
- Week 5 (Oct. 9): up to page 82 (no class on Mon., Oct. 9<sup>th</sup>)
- Week 6 (Oct. 16) : up to page 103
- Week 7 (Oct. 23): Midterm Exam #1
- Week 8 (Oct. 30): up to page 119
- Week 9 (Nov. 6): up to page 135
- Week 10 (Nov. 13): up to page 151 (no class on Wed., Nov. 15)
- Week 11 (Nov. 20): up to page 167
- Week 12 (Nov. 27): up to page 189
- Week 13 (Dec. 4): Midterm Exam #2
- Week 14 (Dec. 11): up to page 207
- Week 15 (Dec. 18): up to page 223
- Week 16 (Dec. 25): up to page 238
- Week 17 (Jan. 1): up to page 253 (no class on Monday, 1/1)
- Week 18 (Jan. 8) – Final Exam