ENG EC 455: Electromagnetics Systems I
Fall, 2017

**Lecturer:** Professor Min-Chang Lee  
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Office hours Tuesday/Thursday, 3:30 – 4:30 PM in “PHO 418”

**Lectures:** Tuesday/Thursday, 1:30 – 3:15 PM in PHO 205

**Teaching Assistant:** Jenny Sun  
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Office hours: TBA6-8 PM

**Textbooks:** D.K. Cheng, “Fundamentals of Engineering Electromagnetics”,  
and Lecture notes.


**Grading Policy:**  
Homework: 20%  
Mid-term exam 1: 25%  
Mid-term exam 2: 25%  
Final exam: 30%  

Midterm Exam (I) will be held on Friday, Oct 13, 6-8 PM.  
Midterm Exam (2) on Friday, Nov 10, 6-8 PM.  
Final Exam (TBA).

Homework will be collected in the class.  
Late homework will not be accepted.

**COURSE SCHEDULE**

1. Sept. 5 Introduction, electromagnetic model, units, 1.1 - 1.3.
2. Sept. 7 Vector analysis, time averages (lecture notes, Chap. 2).

3. Sept. 12 Vector analysis, time averages (lecture notes, Chap. 2).


5. Sept. 19 Maxwell’s equations, EM boundary conditions 6.3.1 - 6.3.2.


7. Sept. 26 Wave equations and solutions, time-harmonic fields, 6.5.

9. Oct. 3 Plane waves in lossy media, group velocity, 7.3 - 7.4.

10. Oct. 5 Electromagnetic power and Poynting vector, 7.5.

11. Oct. 12 Reflection and transmission, 7.6;
Review for 1st midterm exam (Friday, Oct. 13)


14. Oct. 24 Transverse wave along a parallel-plate transmission line,
general transmission line equations, 8.1 - 8.2.

15. Oct. 26 Transmission-line parameters, wave characteristics on
infinite transmission lines, 8.3 - 8.4.

16. Oct. 31 Wave characteristics on finite transmission lines, 8.5.

17. Nov. 2 Smith charts, 8.6.

18. Nov. 7 Smith charts, 8-6.

19. Nov. 9 Transmission line impedance matching, 8.7.
Review for 2nd midterm exam (Friday, Nov. 10)

20. Nov. 14 General wave behaviors along uniform guiding structures,

21. Nov. 16 Rectangular waveguides, 9.3.

22. Nov. 21 Circular waveguides, 9.3.

23. Nov. 28 Dielectric waveguides, cavity resonators, 9.4 - 9.5.

24. Nov. 30 Radiation fields of elemental dipoles, 10.1 - 10.2.

25. Dec. 5 Antenna patterns and parameters, 10.3.
26. Dec. 7 Thin linear antennas, antenna arrays, 10.4 - 10.5.

27. Dec. 12 Review for the Final Exam

28. TBA Final Exam.