

Electromagnetics

Course coordinator: Yoonchan Jeong

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Venue & time: 301-103, 11.00 – 12.15, Tue / Thu

Office hours: 14:00 – 15.00, Tue / Thu

Prerequisite: Introduction to electromagnetism with practice

Credit points: 3

Course overview:

The objective of this course is to provide undergraduate students with a fundamental knowledge of time-varying electromagnetic fields, including their theory and applications. Topics to be covered include: Time-varying fields and Maxwell's equations; Plane electromagnetic waves; Waveguides and cavity resonators (including optical fibres); Theory and applications of transmission lines; Antennas and radiating systems; Special theory of relativity.

Course-book:

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

Reference:

J. D. Jackson, *Classical Electrodynamics*, 3rd ed. Wiley, 1999.

Course schedule:

Week 1: Introduction & Small-group meeting

Week 2: Chap. 7

Week 3: Chap. 8

Week 4: Chap. 8

Week 5: Chap. 8 / Summary

Week 6: Exam 1 / Chap. 10

Week 7: Chap. 10

Week 8: Chap. 10

Week 9: Chap. 10 / Optical fibers / Summary

Week 10: Exam 2 / Chap. 9

Week 11: Chap. 9

Week 12: Chap. 9

Week 13: Chap. 9 / Chap. 11

Week 14: Chap. 11

Week 15: Special theory of relativity / Summary / Exam 3

Assessment methods:

Attendance and participation (10%), assignment (30%), exam 1 (20%), exam 2 (15%), exam 3 (25%)