

Course: ECE 520

Instructor: Piergiorgio L. E. Uslenghi, [uslenghi@uic.edu](mailto:uslenghi@uic.edu)

Lecture delivery method: On campus.

- Lectures will be posted asynchronously every week.
- Physical presence on campus will be mandatory only for the midterm and final exams.
- Optional presence for occasional meetings to discuss material and answer questions.
- All meetings will be announced at least one week in advance.

Contents:

Maxwell's equations and wave propagation.

Electromagnetic properties of materials. Constitutive relations.

Special relativity.

Radiation: antennas and arrays.

Boundary-value problems: methods of solution; waveguides and resonators; planar, cylindrical and spherical structures; scattering.

Textbook:

There is no compulsory textbook, but the following may be profitably consulted:

J.A. Stratton, *Electromagnetic Theory*, Wiley-Interscience.

J. Van Bladel, *Electromagnetic Fields*, Wiley-Interscience.

A. Ishimaru, *Electromagnetic Wave Propagation, Radiation, and Scattering*, Prentice Hall.

Panofsky and Phillips, *Classical Electricity and Magnetism*, Addison-Wesley.

C. A. Balanis, *Advanced Engineering Electromagnetics*, Wiley.

J.A. Kong, *Electromagnetic Wave Theory*.

D.S. Jones, *The Theory of Electromagnetism*, Macmillan.

Students who need to brush up on electromagnetic fields at the undergraduate level may consult any number of undergraduate texts on electromagnetic theory, such as:

K. Wangsness, *Electromagnetic Fields*, 2<sup>nd</sup> edition, Wiley.

Exams:

There are two examinations, one at midterm and one at course end, both closed notes and books with no electronic devices allowed.