Course Description

Review of Maxwell's equations and uniform plane wave, Electromagnetic wave propagation, reflection and transmission through different uniform media, one dimensional multilayer and periodic structure, electromagnetic waveguides, radiation theory, transmitting and receiving antenna, Antenna arrays and applications, and simple radio-wave propagation models.

Grading

- Homework 20%
- Project 30%
- Final Exam 50%

Course Material: Lecture Notes (to be provided)

References


Time and Place

Asynchronous mode. Lectures will be uploaded at the beginning of the week.

Homework

- Homework will be assigned biweekly and will be collected on the following week.

Project

- There will be one project.

Exams

- The date for the final exam will be finalized by the university and will be communicated to you at a later time. It will be asynchronous and most likely you will have two days to complete the exam.

Office Hours

- Tuesdays TBA
Syllabus

(Tentative)

<table>
<thead>
<tr>
<th>Week No.</th>
<th>Topics (see below)</th>
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<td>13</td>
<td>Review</td>
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Course Materials

1. Foundation of the Electromagnetic Phenomenon
2. Maxwell Equations
   - Time-Domain and Frequency-Domain representation of fields
   - The wave phenomenon
   - Power of electromagnetic radiation
   - Plane, cylindrical and spherical waves
3. Radiation Properties of Antennas
   - Directivity
   - Efficiency
   - Gain
   - Friis Formula
   - The concept of antenna input impedance
   - Polarization
4. Line Sources
5. Numerical methods for antenna simulations
6. Small loop antennas
7. Antenna arrays
   - Image theory
8. Mutual Impedance and the Impedance Matrix
   - Reciprocity
   - Radiation pattern measurements
9. High-gain antennas
   - Wide-band antennas
   - Low-profile antennas