

FY1303 Elektricity and magnetism
Spring + fall 2004

- Credit: 15 (“studiepoeng”)
- Duration: Two semesters.
- Lectures:
 - Spring: 3 hours pr week
 - Fall: 2 hours pr week
- Assignments (homework + classroom guidance):
 - Spring: 2 hours pr week
 - Fall: 1 hour pr week
- Laboratory: 7 exercises (ca 70 hours, including two reports)
- Compulsory activities:
 - All laboratory exercises must be completed.
 - At least 2/3 of the homework assignments must be completed.
- Evaluation forms:
 - Midterm exam (March): 20%
 - Midcourse exam (May): 40%
 - Project work (incl report) (October/November): 20%
 - Final exam (December): 20%
- Suggested textbooks: Alonso and Finn *Physics*, or similar (e.g. Young and Freedman; Tipler and Mosca; Fishbane, Gasiorowicz, and Thornton; Serway and Jewett; Knight)

Contents:

This is an introductory course in electromagnetism and contains: *Electrostatics* (Coulomb's law, Electric fields and forces, Gauss' law, Electric potential and energy, Conductors, Dielectrics, Capacitance); *Magnetostatics* (Magnetic fields and forces, Magnetic dipoles, Biot-Savart law, Ampere's law, Magnetic flux, Magnetic materials); *Electromagnetic induction* (Faraday's law, Lenz' law, Inductance); *Electric circuits* (DC- and AC- circuits, Impedance, Resonance).

The second half of the second semester is devoted to a project where the student selects a topic related to electromagnetism and works independently or in a small group. The project may be experimental or theoretical in character and involves writing a report.

Jon Andreas Støvneng
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