



FEI3280 Electromagnetic Compatibility, PhD Course 8.0 credits

Elektromagnetisk kompatibilitet, doktorandkurs

This is a translation of the Swedish, legally binding, course syllabus.

If the course is discontinued, students may request to be examined during the following two academic years

Establishment

Course syllabus for FEI3280 valid from Autumn 2011

Grading scale

Education cycle

Third cycle

Specific prerequisites

Language of instruction

The language of instruction is specified in the course offering information in the course catalogue.

Intended learning outcomes

After the course the student should be able to understand, describe and apply in scientific investigation the difference in creating a state of electromagnetic compatibility between small “isolated” systems and in large distributed systems. This in terms of:

- Interconnectedness and interdependencies.
- Coupling paths and “Point of Entry” for EMI.
- EMC testing.
- Mitigation and protection methods
- Standardization and legislation.
- Non-traditional disturbance characteristics.
- EM-sabotage/terrorism (Intentional electromagnetic interference, IEMI) and jamming.

Course contents

EMC for small isolated versus large distributed systems, coupling paths (conducted and radiated), effect of electrically long conductors/metallic structures, Point of Entries, EMC test methods, low level testing, stochastic tests, mitigation methods, system design and “graceful degradation, time varying system states, EU directive, standardization works, legislation and current Swedish law, Nuclear Electromagnetic Pulses (NEMP) and High Altitude Electromagnetic Pulses (HEMP), Intentional electromagnetic Interference (IEMI) and jamming, Geomagnetically Induced Currents (GIC).

Disposition

Lectures and invited guest speakers, homework problems, oral presentation on selected subject (preferable connecting to own research).

Course literature

Handouts and selected journal papers and book chapters.

Examination

Based on recommendation from KTH’s coordinator for disabilities, the examiner will decide how to adapt an examination for students with documented disability.

The examiner may apply another examination format when re-examining individual students.

Other requirements for final grade

- Oral presentation of a selected topic.
- Completed weekly home-work problems on time.

Ethical approach

- All members of a group are responsible for the group's work.
- In any assessment, every student shall honestly disclose any help received and sources used.
- In an oral assessment, every student shall be able to present and answer questions about the entire assignment and solution.