



# EI2400 Applied Antenna Theory

## 7.5 credits

Tillämpad antennteknik

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 EI2400 valid from Spring 2011

### Grading scale

A, B, C, D, E, FX, F

### Education cycle

Second cycle

### Main field of study

Electrical Engineering

### Specific prerequisites

150 university credits (hp) in engineering or natural sciences including 10 hp electromagnetic theory and documented proficiency in English corresponding to English B.

### Language of instruction

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

## Intended learning outcomes

**Applied Antenna Theory** is a course where theory is put to practice. As a student you will learn how to classify, design, build, and evaluate antennas, e.g. at the end of the course the student will have designed and built a highly directive Wi-Fi-antenna.

Students should at the end of the course be able to:

- Explain the basic function of a given antenna based on the geometry and give a general description of the performance, e.g. the approximate shape of radiation pattern, bandwidth, and polarization.
- Create an antenna specification for a given application.
- Design an antenna from a given specification and be able to judge, by using physical constraints, if it is possible to fulfill the goals of a specification.
- Use measurement equipment, e.g. network analyzers and spectrum analyzers, to measure antenna performance. The students should also be able to use numerical software, e.g. FEM- and MOM-codes, to design and evaluate antennas.
- To find and use relevant technical literature to solve antenna problems.
- To present orally and in written format their results, and be able to give appropriate feedback to fellow students.

## Course contents

Lectures

The course takes a “hands on” approach. Projects and laboratory work are the principal parts. The student will design antennas, build them and measure their properties. The lectures discuss antenna types, antenna synthesis, system aspects on “transmitter – to – receiver” problems, propagation, numerical methods and different aspects of antenna measurements.

Exercises:

Problem solving related to the various parts of the course.

## Course literature

Balanis: Antenna Theory. Analysis and Design.

## Examination

- LAB1 - Laboratory Work, 3.5 credits, grading scale: A, B, C, D, E, FX, F
- PRO1 - Project, 4.0 credits, grading scale: A, B, C, D, E, FX, F

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

Laborations (LAB1; 3,5 cr.)

Projects (PRO1; 4 cr)

## 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.