

SYLLABUS

Waves and antennas 7.5 credits F7029T

Vågor och antenner

Course syllabus admitted: Autumn 2011 Sp 2 - Spring 2013 Sp 4

**DECISION DATE
2011-10-07**

Waves and antennas 7.5 credits F7029T

Vågor och antenner

Second cycle, F7029T

Education level	Grade scale	Subject	Subject group (SCB)
Second cycle	G U 3 4 5	Fysik	Physics

Entry requirements

Mathematics1-4 for civilingenjörer and Linear analysis M0018M and Elektromagnetic field theory F0007T.

Selection

The selection is based on 30-285 credits

Examiner

Hans O Åkerstedt

Course Aim

After the course the student:

- should know how to formulate and solve electrostatic and magnetostatic problems in complicated geometry using the software multiphysics.
- should know how to analyse the propagation of electromagnetic waves in vacuum, dielectric and metallic materials.
- should know how to analyse the propagation of electromagnetic waves in wave guides and optical fibers.
- should know how to analyse transmission lines and the radiation fields from simple antennas.
- should know how to construct and measure the properties of antennas

Contents

Electromagnetic Fields: Potential theory for electrostatics and magnetostatics. Maxwells equations. Plane waves. Propagation of electromagnetic waves in vacuum, dielectric, metallic materials, wave guides and optical fibers. Antenna theory: The radiation field from a source. Multipole expansion of the radiation field, dipole and quadropole antennas. Antenna construction: Construction and measurement of handmade antennas.

Realization

Each course occasion's language and form is stated and appear on the course page on Luleå University of Technology's website.

Lectures, classroom teaching, home assignments and laboratory work

Examination

If there is a decision on special educational support, in accordance with the Guideline Student's rights and obligations at Luleå University of Technology, an adapted or alternative form of examination can be provided. Written examination and laboratory work.

Literature. Valid from Spring 2011 Sp 3

Matthew N. O Sadiku: Elements of electromagnetics. Oxford Univeristy Press

Course offered by

Department of Engineering Sciences and Mathematics

Items/credits

Number	Type	Credits	Grade
0001	Written exam	6	G U 3 4 5
0002	Laboratory work	1.5	U G#

Last revised

by Department of Engineering Sciences and Mathematics 2011-10-07

Syllabus established

by Department of Applied Physics and Mechanical Engineering 2010-02-20