Syllabus

Course name in Swedish
Ickelinjär Optisk Teknologi

Course name in English
Nonlinear Optical Technology

Credits	Course code	Level
12,0	FSK3421	3rd cycle

Main field of study
TFY

School/Department/Division (Code)	Syllabus valid from term
SCI	VT13

Course Objectives

The aim of the course is that the student shall:

- have acquired a thorough understanding of the basic theory and science of nonlinear optics
- be able to describe and to analyze in detail the theory of salient components and basic
  systems employed within modern nonlinear optics
- be able to formulate a physically reasonable and complicated problem in nonlinear optics
  and provide an extended solution to the same, and
- present the problem and discuss the solution in front of the whole class

Main content

Introduction to nonlinear optics, resonant and nonresonant processes, nonlinear optical materials
and applications, ultrashort optical pulses, nonlinear optical fibers, Raman and Brilloin scattering,
nonlinear waveguides and photorefraction and optical damage in materials

Course Literature

P N Butcher and D Cotter: "The Elements of Nonlinear Optics". (1998)
Extensive lecture notes and chapters from other main sources

Language of instrutction: English only

Prerequisites

MSc degree in physics or equivalent education
Specifically, it is assumed that the student has a working knowledge of vector analysis,
EM-wave theory, atomic and molecular physics, basic laser physics, and solid-state physics

Grading scale: P/F

Examination

Solving a large number of homework problems. Designing some (1 or 2) problems of his/her own.
Provide an annotated, extended solution to these problems and present it to the class

Other

Established

Signed by GA	Signed by head of school

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