SH2500 Atomic and Molecular Physics 6.0 credits

Atom- och molekylfysik

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

Establishment

Course syllabus for SH2500 valid from Autumn 2007

Grading scale

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

Education cycle

Second cycle

Main field of study

Specific prerequisites

Language of instruction

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

Intended learning outcomes

Introductory Atomic- and Molecular Physics will be discussed more in detail. A big part of the course will give a view of the modern experimental tools of Atomic- and Molecular Physics.

Course contents

The atom, the nucleus, the electron and the photon - four necessary steps for the development of quantum physics. The structure of the atom. Atoms in electric and magnetic fields. Fine and hyperfine structure. X-ray spectroscopy. Molecular structure. Rotation-, vibration- and electronic spectra. Chemical bonds. Optical spectroscopy. Laser cooling. Bose-Einstein condensation. Intangled quantum states. The laser principle. Atomic lasers.

Course literature

H. Haken och H.C. Wolf: The Physics of Atoms and Quanta, Springer Verlag 2000

Examination

- ÖVN1 - Exercise, 1.5 credits, grading scale: P, F
- TEN1 - Examination, 4.5 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.

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

Other requirements for final grade

Active participation at the lectures. One presentation of a part of the course (OVN1; 1,5 university credits). One written examination (TENA; 4,5 university credits).

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.