SH2501 Atomic and Molecular Physics, Advanced Course 3.0 credits

Atom- och molekylfysik, fortsättningskurs

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

Establishment

Course syllabus for SH2501 valid from Autumn 2007

Grading scale

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

Education cycle

Second cycle

Main field of study

Specific prerequisites

Recommended prerequisites: 5A1247/SH1009 Modern Physics and SH2500 Atomic-and Molecular Physics.

Language of instruction

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

Intended learning outcomes

The course is a continuation of the Atomic and Molecular Physics course, SH2500. 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. Applying laser spectroscopic methods as well as other modern tools in atomic and molecular physics, special efforts will be made in laboratory work.

Course literature

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

Examination

- LAB1 - Laboratory work, 3.0 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.

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

Other requirements for final grade

Laboratory work (LAB1; 3 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.