

Syllabus

for course at first level

Fundamental Quantum Physics
Kvantfysikens principer

**7.5 Higher Education
Credits**
7.5 ECTS credits

Course code:	FK2003
Valid from:	Autumn 2007
Date of approval:	2006-09-27
Department	Department of Physics
Subject	Physics
Specialisation:	G1N - First cycle, has only upper-secondary level entry requirements

Decision

Prerequisites and special admittance requirements

Swedish upper secondary school courses Mathematics D and Physics B, or equivalent.

Course structure

Examination code	Name	Higher Education Credits
1100	Fundamental Quantum Physics	7.5

Course content

An introduction to quantum physics with emphasis on understanding of the fundamental concepts rather than mathematical methods. The general quantum mechanical formalism and conceptual apparatus is developed by studies of simple systems like the double slit experiment for particles and the Stern-Gerlach apparatus. Topics treated in the course include the wave-particle duality of matter, the probability interpretation of quantum mechanics, the uncertainty principle, quantization of physical entities like energy and spin, and particle wavefunctions.

Learning outcomes

After having passed the course the student is expected to:

- * have knowledge about basic problems and questions within quantum physics
- * understand the difference between a classical and a quantum mechanical state
- * be able to handle simple quantum mechanical problems involving wave functions and simple Dirac formalism

Education

The education consists of lectures and exercises.

Forms of examination

- a. The student's knowledge will be tested by a written and/or oral exam.
- b. Grading is carried out according to a 7-point scale related to learning objectives:
A = Excellent
B = Very Good

C = Good
D = Satisfactory
E = Sufficient
Fx = Fail
F = Fail

c. Grading criteria for the course will be distributed at the start of the course.

d. A minimum grade of E is required to pass the course.

e. Students who fail to achieve a pass grade in an ordinary examination have the right to take at least further four examinations, as long as the course is given. The term “examination” here is used to denote also other compulsory elements of the course. Students who have achieved a pass grade on an examination may not retake this examination in order to attempt to achieve a higher grade. Students who have failed to reach a pass grade on two occasions have the right to request that a different teacher be appointed to set the grade of the course. A request for such appointment must be sent to the departmental board.

Interim

Students may request that the examination is carried out in accordance with this syllabus even after it has ceased to apply. This right is limited, however, to a maximum of three occasions during a two-year-period after the end of giving the course. A request for such examination must be sent to the departmental board.

Limitations

The course may not be included as a part of a degree together with the course Kvantfysikens grunder or Fy1110.

Misc

The course is given as an individual course.

Required reading

Course literature is decided by the departmental board and is described in an appendix to the syllabus.