Department of Physics

Stockholm University

Syllabus

for course at first level

Quantum Phenomenology and Radiation Physics
Kvantfenomen och strålningsfysik

7.5 Higher Education Credits
7.5 ECTS credits

Course code:	FK5015
Valid from:	Autumn 2008
Date of approval:	2007-08-28
Department	Department of Physics
Subject	Physics
Specialisation:	G2F - First cycle, has at least 60 credits in first-cycle course/s as entry requirements

Decision

Prerequisites and special admittance requirements

Access to the course requires knowledge equivalent to the course Quantum mechanics I (FK5011).

Course structure

Examination code	Name	Higher Education Credits
1100	Quantum Phenomology and Radiation Physics	7.5

Course content

The course covers:
Time-dependent perturbation theory, emission and absorption of radiation, angular momentum and spin. Introduction to atomic physics, molecules and solid state physics. Introduction to nuclear physics: the structure of the nucleus, nuclear models, excited states, decay processes, transition rates. The field of knowledge that the course encompasses is also useful for school teachers and in other occupations with technical or scientific character.

Learning outcomes

It is expected that the student after taking the course will be able to:
* understand and describe time dependent perturbation theory, angular momentum and spin
* describe, on an introductory level, atoms, molecules and solid materials
* understand and describe basic models of nuclear structure and nuclear processes

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 courses Quantum Physics, Advanced Course, 20 p (FY3150), Theoretical Quantum Physics, Advanced Course,
11 p (FY3230), Theoretical Quantum Physics, Advanced Course 8 p (FY3330), or the equivalents.

Misc

The course may be a component of the candidate programme in physics, and it can also be taken as an individual course.

Required reading

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