Faculty of Technology and Science
Physics

Syllabus

Course Approval
The syllabus was approved by the Faculty Board of Technology and Science on 12 December 2012 , and is valid from the Spring semester of 2013 at Karlstad University.

Course Code: FYGB06
Modern experimental physics, 7.5 ECTS Credits
(Modern experimentell fysik, 7.5 Swedish credit points)
Degree Level: Bachelor
Progressive Specialisation: G2F (First cycle, has at least 60 credits in first-cycle course/s as entry requirements)

Language of Instruction
Swedish or English

Prerequisites
Physics 45 ECTS cr and Mathematics 30 ECTS cr, including the courses Quantum Physics I and Solid State Physics, or equivalent

Major Field of Study
FYA (Physics), TKA (Engineering Physics)

Learning Outcomes

The aim of the course is that students acquire basic knowledge and skills to plan and conduct scientific experiments in modern physics and to present the research problems and the results of these experiments orally and in writing. The course is also a deepening of the students' knowledge of quantum physics, solid state physics and nanoscience as well as current research.

Upon completion of the course, students should be able to:
- demonstrate deepened knowledge of experimental methods in some parts quantum physics, solid state physics and nanoscience and their use in current research, development and applications,
- independently design, plan and carry out a supervised experiment based on a given problem in one of the fields mentioned above,
- perform literature searches on a given problem and assess the results yielded in relation to scientific literature,
- compile the result of the experiment in a science report and present and discuss the result orally in a scientific manner.

Content and Form of Instruction

The course is offered in the form of laboratory sessions where research issues and problems are explored experimentally. The course centres on a number of pre-planned and supervised laboratory experiments and on a supervised and independently conducted experimental project. The experiments deal with problems in the fields of quantum physics, solid state physics and nanscience.

Reading List

See separate document.

Examination

Assessment is based on student's performance in conducting mandatory laboratory experiments and on the oral and written presentation of an experimental project.

Grades

Engineering students are awarded one of the grades U (Fail), 3 (Pass), 4 (Not without distinction) or 5 (Distinction) in the examination of the course. Other students are awarded one of the grades Fail (U), Pass (G), or Distinction (VG) in the examination of the course.

Quality Assurance

Follow-up relating to learning conditions and goal-fulfilment takes place both during and upon completion of the course in order to ensure continuous improvement. Course assessment is based on student views and experiences as reported in written course evaluations and/or group discussions. Students will be informed of the result of the evaluation and of the measures to be taken.

Course Certificate

A course certificate will be provided upon request.

Additional Information

Students who enrolled before 1 July 2007 will complete their studies in accordance with the requirements of the earlier admission. Upon completion students may request degree and course certificates to be issued under the current ordinance if they meet its requirements.

The local regulations for studies at the Bachelor’s and Master’s levels at Karlstad University stipulate the obligations and rights of students and staff.

Elective course for the broad curricular base engineering programme with an emphasis on engineering physics.

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