



SK2904 Quantum Materials 7.5 credits

Kvantmaterial

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

Establishment

Course syllabus for SK2904 valid from Autumn 2019

Grading scale

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

Education cycle

Second cycle

Main field of study

Engineering Physics

Specific prerequisites

At least 120 credits in engineering and natural sciences and knowledge of English B or equivalent.

Language of instruction

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

Intended learning outcomes

After the course, students should be able to:

- Describe the characteristics of different quantum materials and explain the physical background to these unique characteristics.
- Explain how these materials can be used in future technical applications.
- analyze how new quantum materials can affect development towards a sustainable society. Assess which experimental methods are best suited to characterize the properties of quantum materials.

Course contents

This course deals with a series of important quantum materials in the future. Their unique features will be described, a physical description of how these properties occur, and how and why these materials have the potential to open up new technological opportunities in the future. Furthermore, the course will treat the most important and most powerful experimental characterization methods used to understand these complex materials down to a subatomic level. Special attention is paid to methods used in large-scale research facilities such as MAX IV and ESS.

Course literature

Research articles and material from the department. Detailed information about additional literature is announced in the course PM.

Examination

- LAB1 - Laboratory work, 2.0 credits, grading scale: P, F
- PRO1 - Project work, 5.5 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.

The examiner, in consultation with the KTH Disability Coordinator (Funka), decides on any adapted examination for students with documented permanent impairment. The examiner may grant another examination form for reexamination of single students.

Other requirements for final grade

Approved project work (PRO1) and approved laboratory (LAB1). The grade on PRO1 determines the grade on the course.

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.