



SI2600 Condensed Matter Theory 7.5 credits

Kondenserade materiens teori

Course syllabus for SI2600 valid from Autumn 07

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

Grading scale: A, B, C, D, E, FX, F

Education cycle: Second cycle

Main field of study: Physics

Intended learning outcomes

After the course you should be able to:

- Formulate the many particle problem in second quantized version.
- Use theoretical methods for the many body problem to solve problems covered in the course.
- Give an account of the problems in the area that are treated in the course.

Course main content

Second quantization, the electron gas, boson and fermion systems, electron-phonon interactions, superconductivity, transport theory, mesoscopic physics, quantum Hall effect, Kondo effect and heavy fermions.

Language of instruction

Language of instruction is specified in the course offering information in the course and programme directory.

Eligibility

Recommended prerequisites: Introductory courses in solid state physics (Kittel level), quantum mechanics and statistical physics are required. Quantum mechanics advanced course SI2380 (5A1385) and Statistical physics SI2510 (5A1390) are recommended.

Literature

P. L. Taylor and O. Heinonen, A quantum approach to condensed matter physics, Cambridge University Press 2002.

Examination

- INL1 - Assignment, 4.5 credits, grading scale: A, B, C, D, E, FX, F
- TEN1 - Examination, 3.0 credits, grading scale: A, B, C, D, E, FX, F

Requirements for final grade

Homework problems (INL1; 4,5 university credits) and oral examination (TEN1; 3 university credits).