

Module: Specialization I

Module No.: physics610

Course:**Condensed Matter Physics I**

Course No.:

Category	Type	Language	Teaching hours	CP	Semester
Elective	Lecture with exercises	English	3+1	6	WT

Requirements:**Preparation:**

Basic knowledge in condensed matter physics and quantum mechanics

Form of Testing and Examination:

Oral or written examination

Length of Course:

2 semesters

Aims of the Course:

Comprehensive introduction to the basic principles of solid state physics and to some experimental methods. Examples of current research will be discussed.

Contents of the Course:

The entire course (Condensed Matter I & II, given in 2 semesters) covers the following topics:

Crystal structure and binding

Reciprocal space

Lattice dynamics and thermal properties

Electronic structure (free-electron gas, Fermi surface, band structure)

Semiconductors and metals

Transport properties

Dielectric function and screening

Superconductivity

Magnetism

Recommended Literature:

Skriptum (available during the course)

Ashcroft/Mermin: Solid State Physics

Kittel: Introduction to Solid State Physics

Ibach/Lüth: Festkörperphysik