

**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