

Condensed Matter Physics

Module No.: MN-P-SP-CondMat, MN-P-PN-CondMat, MN-P-WaMa

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Course: Condensed Matter Physics

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Category	Type	Language	Teaching Hours	CP	Semester
Core course	Lecture	English	3+1	6	WiSe
Core course	Lecture	English	3+1	6	SuSe

Requirements for participation:

Basic knowledge in condensed matter physics and quantum mechanics

Type of module examinations:

One oral examination at the end of the module

Duration of the course:

2 semesters

Aims of the course:

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

Contents of the course:

Topics covered are:

- Crystal structure
- 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: Solid-State Physics. An Introduction to Principles of Materials Science