

Module: Elective Advanced Lectures: BCGS Courses

Module No.: physics70d

Course:



Experimental methods in condensed matter physics (E/A)

Course No.:

Category	Type	Language	Teaching hours	CP	Semester
Elective	Lecture	English	2	3	WT

Requirements for Participation:

Preparation:

Basic knowledge in condensed matter physics

Form of Testing and Examination:

Oral examination

Length of Course:

1 semester

Aims of the Course:

Understanding of experimental concepts in condensed matter science

Knowledge of basic fields and important applications

Contents of the Course:

The lecture introduces to modern experimental approaches in solid state physics. Basic concepts are illustrated with examples of physical problems investigated employing different methods.

Topics covered are

Introduction on sample preparation

X-ray powder diffraction

Specific heat, Thermal expansion

Magnetization and magnetic susceptibility

DC-Transport

Dielectric spectroscopy

Photo-emission spectroscopy

Inelastic scattering (neutrons, light)

THz spectroscopy / Optical spectroscopy

Scanning probe microscopy/spectroscopy (AFM, STM)

Recommended Literature:

Skriptum (available during the course)

Bergmann/Schäfer, Experimentalphysik (Band 6: Festkörper)

Ibach/Lüth, Festkörperphysik

Ashcroft/Mermin, solid state physics