

Condensed Matter Physics

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

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Course: Photons and Matter

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Category	Type	Language	Teaching Hours	CP	Semester
Specialized Course	Lecture	English	2	3	

Requirements for participation:

Basic knowledge of condensed matter physics

Type of module examinations:

One oral examination at the end of the module

Duration of the course:

1 semester

Aims of the course:

Profound understanding of the interaction of light and matter, the use of optical methods in inorganic and organic condensed matter research, and optically induced phenomena in condensed matter. The student will be able to apply the required theoretical knowledge to interpret experimental data using examples taken from current research.

Contents of the course:

Topics covered are:

- Classical and quantum mechanical description of interaction of light and matter
- Elementary excitations of condensed matter
- Models for the optical response of materials.
- Effects of quantum confinement
- Linear spectroscopies
- Magneto-optical spectroscopies
- Time resolved spectroscopy
- Examples of current research

Recommended literature:

- Optical properties of Solids, Mark Fox, Oxford university press (2010)