

**Modules:**

physics700 **Elective Advanced Lectures**  
 physics710 **Experimental Physics**  
 physics720 **Applied Physics**

**Course:****Optical Spectroscopy (E/A)**

Course No.:

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

**Requirements:****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 the basic concepts and techniques of optical spectroscopy on solid-state samples.

**Contents of the Course:**

Topics covered are:

Electromagnetic waves in matter, dielectric function

Electromagnetic response of metals and insulators, Drude-Lorentz model

Kramers-Kronig relations

THz spectroscopy (time domain and cw)

Fourier-transform spectroscopy

Ellipsometry

Examples of current research (phonons, magnons, orbital excitations, superconductors, ...)

**Recommended Literature:**

Skriptum (available during the course)

Dressel/Grüner: Electrodynamics of Solids: Optical Properties of Electrons in Matter (Cambridge, 2002)

Klingshirn: Semiconductor Optics (Springer, 1997)

Kuzmany: Solid-State Spectroscopy: An Introduction (Springer, 2009)