

**Modules:**

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

**Course:****Magnetism (E/A)**

Course No.:

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

**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 magnetism in condensed matter systems

**Contents of the Course:**

The lecture introduces to the magnetism in condensed matter systems. Starting from basic concepts of the magnetic properties of free atoms it is aimed to illustrate the extremely rich field of collective magnetism that arises from the mutual interaction of an extremely large number of interacting particles.

Topics covered are

Magnetism of free atoms  
 Magnetism of ions in the crystal electric field  
 Magnetic interactions and ordering phenomena  
 Magnetic ground states and excitations  
 Itinerant magnetism  
 Magnetic frustration and low dimensionality  
 Magnetic order vs. competing ordering phenomena

**Recommended Literature:**

Skriptum (available during the course)  
 S. Blundell, Magnetism in Condensed Matter  
 Ashcroft/Mermin, Solid State Physics  
 Kittel, Festkörperphysik