Adam Mickiewicz University in Poznan

Doctoral School of Exact Sciences AMU

Modern magnetic materials.

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Lectures / Laboratories**.**

Field of science	Physics / Materials Engineering**.**
Teaching method	Lectures / Laboratories**.**
Language	English
Numbers of hours	15
Aims of the course	1) Presentation knowledge in the field of modern magnetic materials 2) To familiarize PhD students with issues related to the fabrication of magnetic materials and the characterization of their properties. 3) To introduce PhD students to selected applications of modern magnetic materials.
Course contents	1) Magnetic thin films: fabrication and characterization 2) Applications of magnetic thin films in electronics, information technology, and medicine 3) Bulk magnetic materials: soft and hard magnets, magnetocaloric materials 4) Characterization of bulk materials. Trends in the development of magnetic materials
Prerequisites and co-requisites	Knowledge of experimental physics, solid-state physics, and atomic physics. The student should also have a basic understanding of quantum mechanics.

Learning outcomes

On completion of the course PhD candidates will be able to:	**Assessment mode**
Has knowledge of methods for the fabrication of magnetic materials, understands their properties and characterization techniques	E_W01, E_W02
Has knowledge of the impact of modern magnetic materials on the development of electronics, information technology, and medicine	E_W08
Is able to relate the properties of magnetic materials to their potential applications	E_U01
Is capable of acquiring knowledge from various sources and using specialized scientific terminology	E_U02, E_05
Has competencies in conducting interdisciplinary research work	E_K04

Literature	**Basics:** Coey, J. M. D. – *Magnetism and Magnetic Materials*. Appropriate literature references will be recommended during the course.
Additional information	The course will be conducted in the form of an introductory lecture combined with laboratory sessions. The course completion will be based on an oral/written exam.