

60033 - Physics of magnetic materials

Información del Plan Docente

Academic Year	2016/17
Academic center	100 - Facultad de Ciencias
Degree	538 - Master's in Physics and Physical Technologies
ECTS	5.0
Course	1
Period	Second semester
Subject Type	Optional
Module	---

1.Basic info

1.1.Recommendations to take this course

1.2.Activities and key dates for the course

2.Initiation

2.1.Learning outcomes that define the subject

2.2.Introduction

3.Context and competences

3.1.Goals

3.2.Context and meaning of the subject in the degree

3.3.Competences

3.4.Importance of learning outcomes

4.Evaluation

5.Activities and resources

5.1.General methodological presentation

The results programmed for this course include achieving theoretical and experimental expertise in the field of magnetism and magnetic materials. In order to get these results, we have programmed activities that improve the active and continuous implication of students within the different topics. The course consists of two distinct training activities: theoretical lectures (4 ECTS); work in the laboratory and elaboration of reports (1 ECTS). These activities will allow the student to acquire the desired knowledge on the topics of the subject and experimental competence in modern magnetism.

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5.2.Learning activities

- Lecture classes on the main topics of the subject.
- Laboratory practical sessions. The student will conduct the experiment and prepare a report with the obtained results.

5.3.Program

Lesson:

1. Introduction.
2. Diamagnetism. Paramagnetism.
3. Ions in solids: Crystal Electric Field.
4. Exchange interactions.
5. Ferromagnetism. Other magnetic ordering.
6. Magnetic Anisotropy. Domains.
7. Magnetic materials and applications

Laboratory practical sessions.

1. Temperature and field dependence of the magnetization with a SQUID.
2. Magnetic anisotropy with a VSM.
3. Observation of magnetic domain walls by Lorentz microscopy.

5.4.Planning and scheduling

5.5.Bibliography and recommended resources