

## 66115 - Multidisciplinary Joint Educational Project

### Información del Plan Docente

<b>Academic Year</b>	2017/18
<b>Faculty / School</b>	100 - Facultad de Ciencias
<b>Degree</b>	539 - Master's in Nanostructured Materials for Nanotechnology Applications
<b>ECTS</b>	5.0
<b>Year</b>	1
<b>Semester</b>	Second semester
<b>Subject Type</b>	Optional
<b>Module</b>	---

### 1. General information

#### 1.1. Introduction

The students develop a project within a multidisciplinary team covering at least one of the following goals:

- A review of the state of the art, approach to the problem under study, proposal of new ideas, and interpretation of some preliminary experiments.
- Training with advanced physico-chemical characterization techniques and singular instrumentation; definition of specific application-driven protocols measurements.
- Dissemination activities of Nanoscience & Nanotechnology (dissemination material, brochures, website, questionnaires) to the scientific community and the citizens.
- Exploitation Plans and Exploration of New Markets for nano-technological products.

#### 1.2. Recommendations to take this course

The "Multidisciplinary Joint Educational Project" is an optional module equivalent to 5 ECTS credits or 125 student work hours.

The objective of this module is to introduce the student in a multidisciplinary research team, composed by researchers of at least two different disciplines.

As the whole course is taught in English, students need to have an upper-intermediate level in the language: minimum level B1 in the European Common Framework Language Reference, but preferably level B2. Level B1 is reached when the student is able to understand the main points of clear, standard-language texts when covering known matters - whether in terms of work, study or leisure; when able to cope in most situations which the student encounters during a trip to places where the language is spoken; when able to write simple, coherent texts on familiar topics or those in which the student has an interest; and when able to describe experiences, happenings, wishes and ambitions as well as briefly

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justify opinions or explain plans. B2 is achieved when the student is able to understand the main ideas of complex texts that deal with both specific and abstract topics, even if these are technical - though within the field of specialisation; when able to communicate with native speakers with the degree of fluency and ease such that the communication takes place without effort on either side; and when able to write clear, detailed texts on diverse subjects as well as defend a point of view on general topics - giving the pros and cons of the different options.

Additional information about this master (grants, events, etc.) can be found on the web site: [www.unizar.es/nanomat](http://www.unizar.es/nanomat) . Also examples of proposed Multidisciplinary Joint Educational Projects for the year 2016-17.

### 1.3.Context and importance of this course in the degree

This module represents a practical application of the other modules in the course to a real problem where the student - always under supervision of at least two tutors - faces the task of writing a report according to at least one of the main topics listed in section 1.1. The student will make use of the theoretical knowledge, attitudes, aptitudes and skills acquired over the core modules of the course.

### 1.4.Activities and key dates

This module will be done during the second semester, preferably in the mornings to avoid interferences with the lectures in the core modules.

## 2.Learning goals

### 2.1.Learning goals

The student, in order to pass the course, will have to show her/his competence in the following skills:

- Understand and resume the state of the art or technique in a multidisciplinary research line.
- Search for the hot topics and the crucial issues in the project and propose new ideas.
- Develop an original multidisciplinary project with significant levels of independence
- Oral and written communication capabilities, circulating the ideas, results and interaction with colleagues, supervisors, and professionals from other disciplines.

### 2.2.Importance of learning goals

Through this highly specialised module, the students will be able to apply their knowledge of the topic to propose new ideas and projects, gaining abilities that will be of service in their immediate professional future.

## 3.Aims of the course and competences

### 3.1.Aims of the course

This module allows students to gain a significant level of specialisation in the topic area chosen and become even more aware that Nanoscience and Nanotechnology are interdisciplinary disciplines that require the collaboration of chemists, physicists, engineers, biochemists, phylologists, economists, publicists, marketing managers... to cover the full value-chain. In addition, the students will gain experience in their ability to self-teach; to face different and unknown

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problems; interaction with other researchers to increase their ability to work in a team; take decisions; increase their ability to communicate their ideas and results via the creation of a scientific report, etc.

### 3.2. Competences

After completing the course, the student will be competent in the following skills:

- Assess the true difficulties that come with the practical pursuit of an idea or concept.
- Perform independent study and self-teaching that are required to undertake the research or professional activity in the near future.
- Summarize the state of the art and technique on a certain topic and find the hot points of this topic proposing new ideas or concepts to achieve progress beyond the state of the art.
- Oral and written communication, circulating the results and interaction with colleagues and professionals from other disciplines.

### 4. Assessment (1st and 2nd call)

#### 4.1. Assessment tasks (description of tasks, marking system and assessment criteria)

The student will present a written report with a maximum of 15 pages (Times New Roman 12, spacing 1.5) that brings together the multidisciplinary project undertaken. This report should have the previous approval from both student supervisors. The report will be assessed by a committee of three members (score between 1 and 10). In addition to the written report, a public presentation of the work will be made in front of a board of three examiners. The presentation will last a maximum of 15 minutes and will be followed by a debate. The final mark will take into account the quality of the written report and the supervisor's reports (70 %), and its oral presentation (30 %).

### 5. Methodology, learning tasks, syllabus and resources

#### 5.1. Methodological overview

The project will be directed by two doctors with a large experience in the supervision of doctoral theses and projects in different fields dealing with nanoscience and nanotechnology, science education, English philology, communication, marketing, business administration... These supervisors necessarily will belong to two different areas of knowledge. The students will have free access to the UZ library which has powerful databases, specialised books and subscriptions to numerous scientific magazines. In addition, the students will have access to the laboratories at INA and its facilities, as well as other tools and infrastructures available at UZ.

#### 5.2. Learning tasks

The programme offered to the students to help them achieve the learning results includes the following activities :

Highly personalised guidance which favours an increase in the student's autonomous work and encourages students to propose their own ideas and to participate in all stages of the project. Frequent open discussions with the tutors and other colleagues working in the research groups that the students join will also be helpful.

#### 5.3. Syllabus

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### **5.4.Course planning and calendar**

Calendar of actual sessions and presentation of works

This module will take place in the second term. Preferably, tutorials will be in the mornings to avoid interference with the master lectures.

### **5.5.Bibliography and recommended resources**