

Academic Year/course: 2022/23

66118 - Master's Dissertation

Syllabus Information

Academic Year: 2022/23

Subject: 66118 - Master's Dissertation

Faculty / School: 100 - Facultad de Ciencias

Degree: 539 - Master's in Nanostructured Materials for Nanotechnology Applications

ECTS: 14.0

Year: 1

Semester: Annual

Subject Type: Master Final Project

Module:

1. General information

1.1. Aims of the course

The end of Master's project allows students to gain a very high level of specialisation in the topic area chosen and, generally speaking, acquire fundamental abilities for when they join the job market or do their doctoral theses or research contracts. This refers to their ability to self-teach; to face different and unknown problems, intelligently applying a method and protocols that allow for them to be solved; interaction with other researchers to increase their ability to work in a team; develop leadership skills; take decisions, increase their ability to communicate their ideas and results via the creation of projects, reports, articles, posters, etc.

These approaches and objectives are aligned with the following Sustainable Development Goals (SDG) of the Agenda 2030 of the United Nations (<https://www.un.org/sustainabledevelopment/es/>), in such a way that the acquisition of learning outcomes of the subject provides training and competence to contribute to some extent to the achievement of O9. Industry, innovation and infrastructures. More specifically, they will create action to enhance research, foster innovation and upgrade industrial technologies.

1.2. Context and importance of this course in the degree

This module is the culmination of the practical application of the other modules in the course to a real problem where the student - always under supervision of a tutor - faces daily work in a laboratory, living up close the experiences, difficulties, challenges of the work and where to apply a method or series of protocols allowing for the proposed objectives to be achieved. To achieve the above, the student will make use of the theoretical knowledge, attitudes, aptitudes and skills acquired over the six core modules of the course and the two optional modules.

The students develop the Final Master's Project with all the necessary ingredients to create a quality written scientific report that includes: a review of the state of the art, approach to the problem under study, design and execution of the experimental section, interpretation of the results obtained, conclusions and application of the results.

1.3. Recommendations to take this course

The *Final Master's Project* course is obligatory and counts for 14 ECTS credits or 350 student work hours. Both the written report for the project and its defence before three examiners are in English. Therefore, students have to demonstrate an upper-intermediate level in the language.

Students select the Master's project topic from a varied offer on topics of relevance to the current scientific and technological scene. The work is very significantly specialised, so the topic must be in line with the qualification and prior knowledge of the student. The choice of the student requires approval from the supervisor of the Final Master Project; thus ensuring that the student's prior training allows the possibility of covering the topic successfully.

The defence of the Final Master's project can only take place once the student has passed all courses in the Master's.

Examples of Final Master Projects offered in previous editions and additional information about grants can be found at <https://inma.unizar-csic.es/en/training/nanomat-master/>.

2. Learning goals

2.1. Competences

- Assess the true difficulties that come with the practical pursuit of an idea or concept.
- Face unexpected problems with the right methods.
- Apply theoretical knowledge to the interpretation and review of experimental results.
- Abilities for independent study and self-teaching required to undertake the research or professional activity in the near future.
- Skills at oral and written communication, circulating the results and interaction with colleagues and professionals from other disciplines.
- General abilities for good professional practice.

2.2. Learning goals

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

- to develop an experimental project with significant levels of independence and originality
- to know how to apply the theoretical knowledge to the interpretation and review of the experimental results
- to interact with colleagues and professionals from other disciplines
- to communicate and disseminate (oral and written) scientific results

2.3. Importance of learning goals

Through this highly specialised module, the students will be able to apply their knowledge of the topic to be developed into a project, gaining abilities that will be of service in their immediate professional future.

3. Assessment (1st and 2nd call)

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

The student will present a written report with a maximum of 30 pages (excluding cover page, index, abstract in English & Spanish, list of acronyms and references) in Times New Roman 12, spacing 1.5, with the possibility of including limitless appendices with figures, tables, etc. that brings together the project undertaken. The master thesis will be defended publicly before three lecturers from the Master's. The defence will include not only the presentation of the starting hypothesis, development of the project and the conclusions, but also an intense debate with the tribunal on the validity and out reach of the results obtained - in which all relevant scientific aspects of the project undertaken will be discussed. The viva will last a maximum of 20 minutes, followed by the debate lasting a maximum of 20 minutes. A score of between 1 and 10 will be given for the scientific quality of the write-up (50%), oral presentation (30%), and defence (20%), which will take into account the tutors report about the student's work.

4. Methodology, learning tasks, syllabus and resources

4.1. Methodological overview

The aim of the *Dissertation* is to enable students to apply and develop a range of skills and competences acquired throughout the Degree. Students are expected to show their competence in planning, writing and defending a piece of research on a topic. This process is mainly based on the student's autonomous work but his/her progress will be supervised by a supervisor in tutorials throughout the academic year.

The project will be directed by doctors with a large experience in the supervision of doctoral theses and research projects. The students will have access to the next-gen laboratories of the departments and research institutes of the University of Zaragoza. There will also be free access to the UZ library which has powerful databases, specialised books and subscriptions to numerous scientific journals.

4.2. Learning tasks

This is a 14 ECTS course that offer to the students highly personalised tutoring which: i) favours an increase in the student's autonomous work, ii) encourages students to give their own ideas and to participate in all stages of the project (planning, undertaking experiments, interpretation of results and circulation).

The student is expected to attend an induction section in which guidelines for initial dissertation preparation will be provided. To prepare the dissertation draft, the student is expected to engage in autonomous work (use of the library, reviewing the literature, writing the draft of the dissertation and revising the draft).

Additionally, the student can set up regular appointments for office hour consultation. Tutorials will allow students to solve questions, discuss unclear ideas or doubts related to the dissertation. It is advisable to come with clear and specific questions. Frequent open discussions with the tutors and other colleagues working in the research groups that the student has joined will also take place.

4.3. Syllabus

Each student will choose a topic for his/her dissertation from one of those offered within the academic course. Examples of proposed Final Master Thesis for the year 2021-22 can be found in:

<https://inma.unizar-csic.es/en/training/nanomat-master/>

4.4. Course planning and calendar

Students will defend their Master's Dissertation if they have successfully passed 36 ECTS (compulsory courses) and 10 ECTS (optional courses). The defense date is set by the Faculty of Sciences and will be published in its website.

Students commonly start their Final Master's Project once the CGCM (Comisión de Garantía de Calidad del Master) has approved the Project Assignments (by November at the latest). Please refer to <https://ciencias.unizar.es/master-en-materiales-nanoestructurados-para-aplicaciones-nanotecnologicas-2014-15> for a more detailed description of the procedures and dates related to Final Master Project.

Schedule of basic activities under the supervisor's guidance:

1. Determining your topic, scope and purpose. It is strongly advised that the choice of topic and scope for your dissertation is completed by the first 4 weeks of the first semester.
2. Planning individual tutorials.
3. Progress reports (draft revisions).
4. Final editing and proofreading. The final version of the *Dissertation* will be handed in to the supervisor at least two weeks before the deadline for official submission.