

Treball de Fi de Màster**2012/2013**Code: 42269
ECTS Credits: 15

Degree	Syllabus	Type	Year	Semester
4313132 Nanotecnologia i Ciència de Materials / Nanotechnology and Materials Science	1096 Nanotecnologia i Ciència de Materials / Nanotechnology and Materials Science	O	1	0

ContactName: Eva Maria Pellicer Vilà
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Principal working language: anglès (eng)

Prerequisites

A degree in Chemistry, Physics, Materials Science, Nanoscience and Nanotechnology or related field is convenient. The student must be enrolled in the Master in Nanotechnology and Materials Science.

Objectives and Contextualisation

The Master's Thesis is aimed at introducing the students to R&D in the Nanotechnology and Materials Science field through an experimental, theoretical or simulation approach. The students will gain knowledge on several techniques involved in one or more aspects of the design, preparation, handling, manufacturing, characterization and applications of (nano)materials and related (nano)devices.

The Master's Thesis (15 ECTS) should serve as a synthesis of skills and knowledge acquired during the full Master's program and it is built on the outcome of a previous bibliographic/work planning -*Research Methodologies* (12 ECTS)-.

The Master's Thesis will be developed within a research group under the supervision and direction of a teacher (director).

Skills

- Analyse the research results to obtain new products or processes evaluating their industrial and commercial viability for transfer to society.
- Demonstrate a capacity to face research problems in nanotechnology or materials science from beginning to end, from conceptual planning and bibliographic searches to oral and written presentation of the results obtained.
- Demonstrate a mastery of scientific technology and develop skills for arguing the research results in the context of scientific production to understand and interact effectively with other professionals.
- Possess and comprehend knowledge that offers the basis and opportunity to be original in the development and/or application of ideas, frequently in a research context
- Search for information in the scientific literature using the appropriate channels and integrate that information for proposing and contextualising a research topic
- Students must be capable of integrating knowledge and dealing with the complexity of formulating judgements on the basis of incomplete or limited information, including considerations of the social and ethical responsibilities associated to the application of their knowledge or judgements

- Students must know how to communicate their conclusions and final reasons sustaining the same to specialised and unspecialised audiences in a clear and unambiguous manner
- Students must possess learning abilities to enable them to continue studying in a way that will to a large extent have to be self-managed and autonomous
- Students should know how to apply the knowledge acquired and their capacity for resolution to problems in new or little known environments in broader (or multidisciplinary) contexts related with their field of study

Learning outcomes

1. Analyse the research results to obtain new products or processes evaluating their industrial and commercial viability for transfer to society.
2. Apply concepts and theories appropriately to produce a research project in areas related to nanotechnology and materials science
3. Carry out a research project
4. Demonstrate a mastery of scientific technology and develop skills for arguing the research results in the context of scientific production to understand and interact effectively with other professionals.
5. Determine and prioritise objectives, resources and processes to carry out a successful research project
6. Interpret the experimental results of a research project in areas related to nanoscience and nanotechnology and come to reasoned conclusions.
7. Possess and comprehend knowledge that offers the basis and opportunity to be original in the development and/or application of ideas, frequently in a research context
8. Search for information in the scientific literature using the appropriate channels and integrate that information for proposing and contextualising a research topic
9. Students must be capable of integrating knowledge and dealing with the complexity of formulating judgements on the basis of incomplete or limited information, including considerations of the social and ethical responsibilities associated to the application of their knowledge or judgements
10. Students must know how to communicate their conclusions and final reasons sustaining the same to specialised and unspecialised audiences in a clear and unambiguous manner
11. Students must possess learning abilities to enable them to continue studying in a way that will to a large extent have to be self-managed and autonomous
12. Students should know how to apply the knowledge acquired and their capacity for resolution to problems in new or little known environments in broader (or multidisciplinary) contexts related with their field of study
13. Write a scientific text and communicate it in a public presentation

Content

The specific contents will depend on the Master's Thesis topic that the student selects.

Methodology

Towards the end of the 2nd semester the students are required to deliver the Master's Thesis report (validated by their Director/s and tutor if so) and to present an oral defense of the project to the appointed evaluation committee (constituted by three teachers/researchers).

The Master's Thesis defense will consist in the public presentation of the research work developed by the student. The recommended duration of the oral presentation is 20 min and should not exceed 30 min. The Evaluation Committee members will afterwards discuss with the student on all aspects of the work presented for a maximum length of 30 min.

Activities

Title	Hours	ECTS	Learning outcomes

Type: Supervised			
Supervised work	75	3	1, 3, 5, 6, 7, 13
Type: Autonomous			
Self-work	297	11.88	2, 4, 8, 9, 10, 11, 12

Evaluation

The evaluation committee will consider the quality of the research work and the report, as well as the oral presentation/defense of the project.

Evaluation activities

Title	Weighting	Hours	ECTS	Learning outcomes
Master's Thesis Report	50%	2	0.08	1, 2, 3, 5, 6, 7, 8, 9, 11, 12, 13
Oral defense	50%	1	0.04	4, 6, 9, 10, 13

Bibliography

Not applicable.