VNIVERSITAT DE VALÈNCIA

Course Guide
44426 Current issues in nanoscience and molecular nanotechnology

COURSE DATA

Data Subject

Código	44426
Name	Current issues in nanoscience and molecular nanotechnology
Cycle	Master's degree
ECTS Credits	6.0
Curso académico	2017 - 2018

Study (s)

Degree	Center	Acad. year	Period
2208 - M.U. en Nanociencia y Nanotecnolog²a Molecular	FACULTY OF CHEMISTRY	1	First term

Subject-matter

Degree	Subject-matter	Character
2208 - M.U. en Nanociencia y Nanotecnolog²a Molecular	10 - Current issues in nanoscience and molecular nanotechnology	Obligatory

Coordination

Name	Department
CORONADO MIRALLES, EUGENIO	320 - QUđMICA INORGĆNICA

SUMMARY

Lectures and seminars given by specialists on this topic showing the state-of-the-art in this field.

PREVIOUS KNOWLEDGE

Relationship to other subjects of the same degree

There are no specified enrollment restrictions with other subjects of the curriculum.

Other requirements

There are no specified enrollment restrictions with other subjects of the curriculum.

OUTCOMES

2208 - M.U. en Nanociencia y Nanotecnología Molecular

- Students can apply the knowledge acquired and their ability to solve problems in new or unfamiliar environments within broader (or multidisciplinary) contexts related to their field of study.
- Students are able to integrate knowledge and handle the complexity of formulating judgments based on information that, while being incomplete or limited, includes reflection on social and ethical responsibilities linked to the application of their knowledge and judgments.
- That student can communicate their conclusions and the knowledge and rationale underpinning these conclusions, in a clear manner, to specialized and unspecialized audiences.
- Students have the learning skills that will allow them to continue studying in a way that will be largely self-directed or autonomous.
- Students have the knowledge and understanding that provide a basis or an opportunity for originality in developing and/or applying ideas, often within a research context.
- To possess the necessary knowledge and abilities to continue with future studies in the PhD program in Nanoscience and Nanotechnology.
- For students from field of knowledge (e.g. chemistry) to be able to scientifically communicate and interact with colleagues from another field (e.g. physics) in the resolution of problems laid out by the Molecular Nanoscience and Nanotechnology.
- To know the molecular nanoscience "state of the art".
- To know the state of the art in molecular nanomaterials with optical, electric and magnetic properties.
- To assess the relationships and differences between the materials macroscopic properties and those of unimolecular systems and nanomaterials.
- To assess the molecules and hybrid materials relevance in electronics, spintronics and molecular nanomagnetism.
- To know the main biological and medical application in this area.
- To know the main molecular nanomaterials technological applications and to be able to put them in the Material Science general context.
- To know the technical and conceptual problems laid out by the physical properties measurement in single molecular systems (charge transport, optical properties, magnetic properties).
- To know the main applications of nanoparticles and nanostructured materials obtained or functionalised using a molecular approach- in magnetism, molecular electronics and biomedicine.

LEARNING OUTCOMES

English version is not available

Presentación de estado del arte en esta área mediante conferencias impartidas por especialistas en la materia

DESCRIPTION OF CONTENTS

1. European School on Molecular Nanosciencie (ESMolNa)

Lectures and seminars given by specialists on this topic showing the state-of-the-art on this field.

The European School on Molecular Nanoscience (ESMolNa) is organized annually since 2008, with the participation of the most active European research groups working on this topic.

During this school the state-of-the-art in this field is discussed from the perspective of the different disciplines that integrate the field (molecular magnetism, molecular electronics, molecular nanoscience and materials science, etc.). At the same time a discussion forum is created where young researchers (master and PhD students from all around Europe) have the opportunity to present their recent research results in front of a distinguished scientific community.

This school is essential for the cohesion of the interuniversity program and for the creation of a scientific community working in these areas, since it represents the main meeting point for students of this master program with other students, researchers and professors active in this field. Students will give an oral communication showing their results during their research activity, allowing an assessment of the activities carried out by them.

WORKLOAD

ACTIVITY	Hours	% To be attended
Theory classes	40,00	100
Tutorials	15,00	100
Seminars	1,00	100
Development of individual work	20,00	0
Study and independent work	40,00	0
Preparing lectures	34,00	0
TOTAL	**150,00**	

TEACHING METHODOLOGY

Theory classes, participatory lectures

Articles discussion.

Chaired debate or discussion.

Specialized conferences.

Attendance to seminars, conferences and round tables.

EVALUATION

Attendance and active participation in seminars.	50-70%
Continuous evaluation.	10-20%
Research work oral presentation.	20%-30%

REFERENCES

Basic

- CASTELLANO
  Artículos de revisión y de perspectiva aparecidos en las revistas científicas del tipo: Science, Nature, Accounts of Chemical Research, Chemical Reviews, Advanced Materials, Reviews on Modern Physics, etc.

  ENGLISH
  Review and perspective articles appeared in publications such as: Science, Nature, Accounts of Chemical Research, Chemical Reviews, Advanced Materials, Reviews on Modern Physics, etc.

  VALENCIÀ
  Articles de revisió i de perspectiva apareguts en revistes científiques del tipus: Science, Nature, Accounts of Chemical Research, Chemical Reviews, Advanced Materials, Reviews on Modern Physics, etc.
  ern Physics, etc.