UAB
Universitat Autònoma de Barcelona

State of the Art and Research Methods

Code: 43429
ECTS Credits: 9

2025/2026

Degree	Type	Year
Advanced Nanoscience and Nanotechnology	OB	0

Contact

Name: Enric Menendez Dalmau

Email: enric.menendez@uab.cat

Teaching groups languages

You can view this information at the of this document.

Prerequisites

Those required to enroll in a master.

Objectives and Contextualisation

To introduce the basic concepts of nanoscience and nanotechnology research: scientific context, scientific method, documentation and bibliography, ethics, organization, etc.

Competences

- Communicate and justify conclusions clearly and unambiguously to both specialised and non-specialised audiences.
- Continue the learning process, to a large extent autonomously
- Design, plan and carry out a research project in nanoscience and nanotechnology.
- Integrate knowledge and use it to make judgements in complex situations, with incomplete information, while keeping in mind social and ethical responsibilities.
- Seek out information in the scientific literature using appropriate channels, and use this information to formulate and contextualise a research topic.
- Show expertise in using scientific terminology and explaining research results in the context of scientific production, in order to understand and interact effectively with other professionals.
- Solve problems in new or little-known situations within broader (or multidisciplinary) contexts related to the field of study.
- Use acquired knowledge as a basis for originality in the application of ideas, often in a research context.

Learning Outcomes

1. Communicate and justify conclusions clearly and unambiguously to both specialised and non-specialised audiences.
2. Contextualise a research project with regard to the state of the art on the basis of an efficient review of the literature.
3. Continue the learning process, to a large extent autonomously

4. Integrate knowledge and use it to make judgements in complex situations, with incomplete information, while keeping in mind social and ethical responsibilities.
5. Propose appropriate protocols and methodologies to conduct a research project related to nanoscience and nanotechnology.
6. Seek out information in the scientific literature using appropriate channels, and use this information to formulate and contextualise a research topic.
7. Show expertise in using scientific terminology and explaining research results in the context of scientific production, in order to understand and interact effectively with other professionals.
8. Solve problems in new or little-known situations within broader (or multidisciplinary) contexts related to the field of study.
9. Use acquired knowledge as a basis for originality in the application of ideas, often in a research context.

Content

Throughout the course, several research and training talks within the area of Nanoscience and Nanotechnology will be attended. Moreover, three activities on the use of bibliographic tools for research will be carried out. This training will teach students to provide a suitable context to research topics by means of the search of specialized bibliography in journals and databases, as well as the analysis of the reliability of the information collected from different sources. It will also help them to start planning and managing their research projects. With these tools, they will be able to write the report which will focus on the state-of the-art and motivation of the research performed in their Master Thesis.

Activities and Methodology

Title	Hours	ECTS	Learning Outcomes
Type: Directed			
Training talks	0	0	6, 2, 7, 5, 8, 1, 4, 3, 9
Type: Supervised			
Activity on the use of bibliographic tools for research	0	0	6, 2, 7, 5, 8, 1, 4, 3, 9

Throughout the course, several research and training talks within the area of Nanoscience and Nanotechnology will be attended. Moreover, three activities on the use of bibliographic tools for research will be carried out. Each student will have to prepare and defense a written report on the state-of the-art and motivation of the research performed in their Master Thesis.

Annotation: Within the schedule set by the centre or degree programme, 15 minutes of one class will be reserved for students to evaluate their lecturers and their courses or modules through questionnaires.

Assessment

Continous Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes

Exercises	40 %	90	3.6	6, 2, 7, 5, 8, 1, 4, 3, 9
Oral defense	25-30 %	67.5	2.7	6, 2, 7, 5, 8, 1, 4, 3, 9
Thesis	30-35 %	67.5	2.7	6, 2, 7, 5, 8, 1, 4, 3, 9

The evaluation will be done by attending and doing the exercises about the attended talks and activities about the use of bibliographic tools for research (40% of the total mark). The rest of the mark (60% of the total mark) will come from the written report and its defense.

This written report must include the following sections:

- Cover that includes the title, author (name and surnames and NIU), name of the tutor, department and institution where the Master Thesis was carried out, etc.

- Brief presentation of the research carried out in the Master Thesis (1000 words maximum)

- State-of-the-art of the research carried out in the Master Thesis

- Motivation and goals of the research carried out in the Master Thesis

- References

- Annexes

The maximum number of pages (not including the cover, the annexes or the references) is 15.

The oral defense will consist of a 10-minute presentation and a 15-minute question session by the coordinator of the subject.

Evaluation will take place in April. In due time, the coordinator will establish the deadlines to hand in the written reports and schedule the day and time for the oral presentation.

The exercises about the talks and activities will be handed in a few days after the end of the talk or activity.

Bibliography

No assigned bibliography.

Software

No assigned software.

Groups and Languages

Please note that this information is provisional until 30 November 2025. You can check it through this link. To consult the language you will need to enter the CODE of the subject.

Name	Group	Language	Semester	Turn
(TEm) Theory (master)	1	English	annual	morning-mixed