

## Master in Nanosciences and nanotechnologies

# Nanophysics 2nd year

### Presentation

---

The Master 2 Nanophysics offers a solid training providing fundamental and applied courses in nanosciences, nano-physics and nano-instrumentation.

This Master 2 is open to international students, and give access to the Quantum Graduate School program if you have been registered to the 1st year of this program (<https://quantalps.univ-grenoble-alpes.fr/education/graduate-school-program-quantum/>). All courses are given in English.

This international program aims to provide courses and training for elaboration, advanced characterization and deep studies of nanostructures physics like transport properties, optical and magnetic properties of nanostructures based on metal, dielectrics or semiconductors. This program is well suited to the needs of academic laboratories, offering many opportunities for internships or PhD programs. The multidisciplinary nature of the Nanophysics specialization will enable students to continue to deepen their knowledge by covering a wide range of research topics around nano-systems and their applications.

The program contains :

- General courses corresponding to 21 ECTS, 3 of which are devoted to the study of a foreign language
- A project program (6 ECTS) aiming to offer an expertise on modeling and simulation and an opening to research via seminars and research thematic days.
- A 4-5 months full time internship in research teams for the preparation of the master's thesis

This program is in the following of the first year Master Nanophysics-Quantum physics providing fundamentals courses in condensed matter physics (quantum physics I and II, solid-state physics I and II, statistical physics) supplemented by preparatory courses for more specialized second-year courses. The objective of this master program is to provide students with a strong background in general sciences, and a specialization in physics at nano-scale and nano-instrumentation.

This Master Course gives you the opportunity to apply to the UGA Graduate School and one of its 15 thematic programmes. The Graduate School@UGA is a new training programme through and for research which was launched in 2021 within the Université Grenoble Alpes, and which concerns all the schools and components of the UGA.

The objective of these thematic programs is to offer interested students an interdisciplinary training program and academic excellence combining university studies and laboratory internships. Each thematic program develops a specific line of research, allowing then to continue in thesis, or to have a direct professional insertion. The program regroups students registered in different mentions, master programs or engineer school tracks and working together in specific courses

Participation in the Graduate School@UGA is for two years (M1 and M2) and may open the possibility of obtaining an academic scholarship for two years for the best international students (non-French baccalaureate holders).

For more information : <https://www.univ-grenoble-alpes.fr/education/graduate-school/>

### Registration and scholarships

---

## Access conditions

Education requirements :

- For the first year : holders of a bachelor degree in physics, or equivalent diploma
- For the second year : students who have completed the first year of a compatible Master programme or equivalent level

Admission criteria :

- See the section on applications and registration

For candidates whose country of residence is not included in the "Studies in France" portal (PEF) scheme, the calendar for the eCandidat application campaigns is available [here](#)

Public continuing education : You are in charge of continuing education :

- if you resume your studies after 2 years of interruption of studies
- or if you followed a formation under the regime formation continues one of the 2 preceding years
- or if you are an employee, job seeker, self-employed

If you do not have the diploma required to integrate the training, [you can undertake a validation of personal and professional achievements \(VAPP\)](#)

[skin.odf-uga:SKIN\\_ODF\\_CONTENT\\_PROGRAM\\_CANDIDATURE\\_LABEL](#)

Would you like to apply and register? Be aware that the procedure differs depending on the diploma, the degree obtained, or the place of residence for foreign students. Let us guide you simply by following this [link](#)

## Expenses

Tuition fees 2023-2024: 243 €+100€ CVEC

## Practicals informations :

---

- > Component : UFR PhITEM (physique, ingénierie, terre, environnement, mécanique)
- > level : Baccalaureate +5
- > Duration : 1 year
- > Course type : Initial and Continuing Education
- > Location(s) : Grenoble - University campus

## Contacts

---

### Program director

BEA Hélène  
helene.bea@cea.fr

### Program administration

Registrar's Office for the Master in Nanosciences and nanotechnologies  
phitem.master.nano@univ-grenoble-alpes.fr

Application

phitem.candidature.etudiant@univ-grenoble-alpes.fr

## Program

---

### Master 2nd year

#### Semester 9

<b>UE Elaboration of nanostructures / physics of 2D materials</b>	3 ECTS
<b>UE From nanofabrication in research laboratories to VLSI</b>	3 ECTS
<b>UE Nanophotonics &amp; plasmonics</b>	3 ECTS
<b>UE Advanced semiconductor devices</b>	3 ECTS
<b>UE Thematic and interdisciplinary projects</b>	6 ECTS
<b>UE Advanced characterization for Nanostructures</b>	3 ECTS
1 option(s) to choose from 1	
<b>UE Nanomagnetism, spintronics</b>	3 ECTS
<b>UE Nanomaterials and energy</b>	3 ECTS
4 option(s) to choose from 5	
<b>GS_Quantum_UE_Quantum Optics</b>	3 ECTS
<b>GS_Quantum_UE_Condensed Matter</b>	3 ECTS
<b>UE Introduction to Machine Learning and Deep Learning</b>	3 ECTS
<b>UE Active matter</b>	3 ECTS
<b>UE in another program</b>	6 ECTS

#### Semester 10

<b>UE Master Thesis</b>	30 ECTS
-------------------------	---------