

## Master Nanosciences et nanotechnologies

# Parcours Nano-physics

### Présentation

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The track Nanophysics, nanostructures offers fundamental and applied courses in nanosciences, nano-physics and nano-instrumentation. This track is opened to international students. All courses are given in english.

The curriculum contains :

- General courses corresponding to 12 ECTS, among which 6 devoted to the study of a foreign language
- Transverse courses in nanosciences and nanotechnologies (15 ECTS) with a large focus on experimental teaching and projects on the cleanrooms and facilities of the Grenoble area
- Specific courses in nano-physics, (30 ECTS spread over the two years)
- Elective courses (33 credits) for further specialization or opening in nanosciences
- Internships in research teams, 8 weeks the 1st year and 5 months the 2nd year, for preparing the master thesis

For more informations on this [track](#)

### Objectifs

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The objective of the nano-physics track in the Nanosciences and nanotechnologies master program is to provide students with a strong background in general sciences, and a specialization in physics at nano-scale and nano-instrumentation.

### Admission

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- Entry in 2nd year: students who have validated the 1st year of a master's degree in a compatible course or equivalent level

Public continuing education : You report continuing education :

- if you resume your studies after 2 years of interruption of studies
- or if you followed training under the continuous training regime one of the previous 2 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 \(VAPP\)](#)

For more information, [visit the website of the Continuing Education and Learning Branch](#)

Do you want to apply and register? Note that the procedure differs according to the diploma envisaged, the diploma obtained, or the place of residence for foreign students. Let yourself be guided simply by following this [link](#)

For applicants whose country of residence does not fall under the "Study Portal in France" (PEF), the schedule of the application campaigns for the eCandidat application is available [here](#).

## Infos pratiques :

- > **Composante** : UFR PhITEM (physique, ingénierie, terre, environnement, mécanique)
- > **Durée** : 2 ans
- > **Type de formation** : Formation initiale / continue
- > **Lieu** : Grenoble - Domaine universitaire
- > **Contacts** :

### Responsable(s) pédagogique(s)

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### Secrétariat de scolarité

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

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

## Programme

### Master 1re année

#### Semestre 7

<b>UE Surfaces and interfaces</b>	3 ECTS	24h
<b>UE Phase Transitions, transport and fluctuations</b>	3 ECTS	24h
<b>UE Practicals in Nanosciences</b>	3 ECTS	26h
<b>UE Solid state, electrons and phonons</b>	3 ECTS	27h
<b>UE Quantum physics</b>	3 ECTS	24h
<b>UE Micro and nanofluidics</b>	3 ECTS	24h
<b>UE Soft Matter</b>	3 ECTS	22,5h

1 élément(s) au choix parmi 9

<b>UE From solution to solid</b>	6 ECTS	50,5h
<b>UE Image and signal processing</b>	3 ECTS	24h
<b>UE Physics of living systems</b>	3 ECTS	21h
<b>UE Molecular biology</b>	6 ECTS	48h
<b>UE Semi-conductors physics</b>	3 ECTS	26h
<b>UE Optical spectroscopy</b>	3 ECTS	22h
<b>UE Scientific softwares</b>	3 ECTS	34,5h
<b>UE Current trend in Nanosciences</b>	3 ECTS	16h

1 UE de 6 ECTS ou 2 Ues de 3 ECTS ou 1 UE de 3 ECTS d'un autre parcours ou autre mention ou Phelma

1 élément(s) au choix parmi 2

<b>UE Insertion professionnelle</b>	3 ECTS	24h
<b>UE Français Langue Etrangère (FLE)</b>	3 ECTS	

#### Semestre 8

<b>UE Nanosciences</b>	6 ECTS	50h
<b>UE Stage de recherche</b>	6 ECTS	
<b>UE Nanophysics with local probes</b>	3 ECTS	27h
<b>UE Mechanics at the micro &amp; nano-scale</b>	3 ECTS	24h

2 élément(s) au choix parmi 15

<b>UE Physics of the colloidal domain</b>	6 ECTS	48h
<b>UE Magnetisme &amp; Nanosciences</b>	3 ECTS	27,5h
<b>UE Molecular Photophysics</b>	3 ECTS	25h
<b>UE Electrochemistry</b>	3 ECTS	
<b>UE Molecular biology project</b>	3 ECTS	24h
<b>UE Physiology</b>	3 ECTS	22h
<b>UE Cell biology</b>	3 ECTS	20h
<b>UE Particle-Ray Matter Interactions</b>	6 ECTS	40h
<b>UE Nuclear magnetic resonance and magnetic resonance imaging</b>	3 ECTS	20h

<b>UE Optical spectroscopy</b>	3 ECTS	22h
<b>UE Scientific softwares</b>	3 ECTS	34,5h
<b>UE Current trend in Nanosciences</b>	3 ECTS	16h
<b>UE Numerical simulations project</b>	3 ECTS	
<b>UE Physics of 2D Materials: from elaboration to properties</b>	3 ECTS	24h
<b>1 UE de 6 ECTS ou 2 Ues de 3 ECTS ou 1 UE de 3 ECTS d'un autre parcours ou autre mention ou Phelma</b>	6 ECTS	
1 élément(s) au choix parmi 2		
<b>UE Anglais</b>	3 ECTS	
<b>UE FLE</b>	3 ECTS	

<b>UE Master thesis</b>	24 ECTS
1 élément(s) au choix parmi 4	
<b>UE Anglais</b>	3 ECTS 22h
<b>UE Capita selecta lectures in nanosciences</b>	3 ECTS 26h
<b>UE SET ou Phelma ou mention</b>	3 ECTS
<b>UE FLE</b>	3 ECTS

## Master 2e année

### Semestre 9

<b>UE Micro-Nano Fabrication</b>	3 ECTS	26h
<b>UE Research training</b>	3 ECTS	40h
<b>UE Physics and elaboration of nanostructures</b>	3 ECTS	22,5h
<b>UE Quantum nanoélectronics</b>	3 ECTS	22,5h
<b>UE Adhesion, friction and direct bonding</b>	3 ECTS	21h
4 élément(s) au choix parmi 12		
<b>UE Quantum engineering quantum information</b>	3 ECTS	22,5h
<b>UE Nanophotonics &amp; plasmonics</b>	3 ECTS	22,5h
<b>UE Nanomagnetism, spintronics</b>	3 ECTS	22,5h
<b>UE Nano-structures and energy</b>	3 ECTS	21h
<b>UE Modeling in nanosciences</b>	3 ECTS	22,5h
<b>UE Molecular electronics and magnetism</b>	3 ECTS	20h
<b>UE Biomaterials Engineering</b>	3 ECTS	20h
<b>UE Fluides Complexes / Complex fluids</b>	3 ECTS	22,5h
<b>UE Research training 2</b>	3 ECTS	40h
<b>UE Current trends in Nanosciences</b>	3 ECTS	16h
<b>UE Nano-pores and membranes technologies</b>	3 ECTS	20h
<b>1 UE de 6 ECTS ou 1 UE de 3 ECTS ou 2 Ues de 3 ECTS dans autre parcours ou une autre mention ou de Phelma</b>	6 ECTS	

### Semestre 10