

Master Nanosciences et nanotechnologies

Parcours Nano-physics

Présentation

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 credits) 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 : <https://master-nanosciences.univ-grenoble-alpes.fr/>

Objectifs

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

- Entry in 1st year: Bachelor degree in Chemistry or Physics or equivalent degree.
- 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](#).

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)

David Ferrand
David.Ferrand@ujf-grenoble.fr

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 Tronc commun 1re année

Semestre 7

UE Surfaces and interfaces	3 ECTS	24h
UE Phase Transitions, transport and fluctuations	3 ECTS	24h
UE Practicals in Nanosciences	3 ECTS	26h
UE Solid state, electrons and phonons	3 ECTS	27h
UE Quantum physics	3 ECTS	24h
UE Micro and nanofluidics	3 ECTS	24h
3 élément(s) au choix parmi 11		
UE From solution to solid	6 ECTS	50,5h
UE Optical spectroscopy	3 ECTS	22h
UE Semi-conductors physics	3 ECTS	26h
UE Electromagnetism	3 ECTS	26h
UE Physics of living systems	3 ECTS	21h
UE Soft Matter	3 ECTS	22,5h
UE Scientific softwares	3 ECTS	34,5h
UE Molecular biology	6 ECTS	48h
UE Current trends in Nanosciences	3 ECTS	16h
UE Nano-pores and membranes technologies	3 ECTS	20h
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	6 ECTS	
1 élément(s) au choix parmi 2		
UE Insertion professionnelle	3 ECTS	24h

UE Français Langue Etrangère (FLE) 3 ECTS

Semestre 8

UE Nanosciences	6 ECTS	50h
UE Stage de recherche	6 ECTS	
UE Nanophysics with local probes	3 ECTS	27h
UE Mechanics at the micro & nano-scale	3 ECTS	24h
1 élément(s) au choix parmi 12		
UE Physics of the colloidal domain	6 ECTS	48h
UE Numerical simulations project	3 ECTS	
UE Magnetisme & Nanosciences	3 ECTS	27,5h
UE Semiconducteurs 2	3 ECTS	27h
UE Research Training	3 ECTS	
UE Polymers 2 physico-chemistry	3 ECTS	25h
UE Electrochemistry	3 ECTS	
UE Molecular biology project	3 ECTS	24h
UE Physiology and cell biology	6 ECTS	42h
UE Optic and magnetic spectroscopies	3 ECTS	25h
UE Molecular Photophysics	3 ECTS	25h
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	6 ECTS	
1 élément(s) au choix parmi 2		
UE Anglais	3 ECTS	

UE FLE 3 ECTS

Master 2e année

Semestre 9

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

Semestre 10

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