

Master Nanosciences et nanotechnologies

Parcours Soft matter and biophysics

Présentation

The course offers disciplinary training focused on development and characterization at the nanometric scale with a strong multidisciplinary dimension (physics, soft matter, biology). It relies on research groups working in this field, in particular in relation to the Fondation Nanosciences de Grenoble. This first year training will ensure preparation for Soft -Nano and NanoBiosciences. It can also prepare students for the M2 NanoMedecine. It equips students with skills in the development, manipulation, characterization, understanding and exploitation of nano-systems, nano-materials, nano-structures and unique molecules, as well as knowledge of their application potentials. It makes students aware of the environmental and societal challenges of nanotechnologies. In addition, the mastery of modeling tools will be developed and reinforced for interested physicist students.

This track is opened to international students. All courses are given in english.

The curriculum contains:

- General courses corresponding to 12 ECTS, among which 3 include the study of a foreign language
- Core courses in nanosciences and nanotechnologies specific to soft matter and nanobioscience (27 ECTS) with a large focus on experimental teaching and projects on the cleanrooms and nanosciences facilities of the Grenoble area
- Elective courses (totalizing 15 ECTS) for further specialization in nanosciences or for breadth.
- Internships in research teams, 8 weeks

For more informations on this [track](#)

The main objective of this track is to provide students with strong scientific and technical knowledge in micro- and nano-fabrication, manipulation, measurement and instrumentation at the nano-scale. This include among other, the fonctionnalization of surfaces, the manipulation of single cells, the use of optical techniques for observation and manipulation of single bio-molecules, etc... The program provides students with strong basis in biology, allowing them to pursue ambitious projects at the interface between biology and nano-technologies

Admission

- Entry in 1st year : National diploma conferring the degree of license in a field compatible with that of the master ; title or acquired recognized equivalent by the admissions committee of the University of Grenoble Alpes
- 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 and the date 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](#).

Poursuite d'études

This track offers two main perspectives:

- Continue with a PhD, in France or abroad. The interdisciplinary character of this track leads to a wide variety of domains, ranging from nanotechnologies in biophysics, to subjects more oriented toward biology or health engineering
- Become an engineer in a company or an organism, in the domain of nanotechnologies, biosciences, health engineering, regenerative medicine and/or biotechnologies

Infos pratiques :

- > Composante : UFR PhITEM (physique, ingénierie, terre, environnement, mécanique)
- > Niveau : Bac +5
- > Durée : 2 ans
- > Type de formation : Formation initiale / continue
- > Lieu :

Contacts

Responsable pédagogique

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 Secrétariat de scolarité

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

Programme

Program under construction - depending
 CFVU vote

Master 1re année

Semestre 7

| | |
|---|--------|
| UE Surfaces and interfaces | 3 ECTS |
| UE Mathematics for Biology | 3 ECTS |
| UE Physics and electricity for biology | 6 ECTS |

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| UE Micro and nanofluidics | 3 ECTS |
| 3 option(s) au choix parmi 7 | |
| UE Electromagnetism | 3 ECTS |
| UE Polymers 1 | 6 ECTS |
| UE Physics of living systems | 3 ECTS |
| UE Semi-conductors physics | 3 ECTS |

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| UE Research Project | 6 ECTS |
| 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 |
| UE Scientific softwares | 3 ECTS |
| 1 option(s) au choix parmi 2 | |
| UE Insertion professionnelle | 3 ECTS |
| UE Français Langue Etrangère (FLE) | 3 ECTS |

Semestre 8

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| UE Nanosciences | 6 ECTS |
| UE Physics of the colloidal domain | 6 ECTS |
| 3 option(s) au choix parmi 5 | |
| UE Modelling in systems biology | 3 ECTS |
| UE Mechanics at the micro & nano-scale | 3 ECTS |
| UE Polymers 2 chemistry and physico-chemistry | 6 ECTS |
| UE Scientific softwares | 3 ECTS |
| UEs autre parcours ou Phelma | 6 ECTS |
| 1 option(s) au choix parmi 2 | |
| UE Anglais | 3 ECTS |
| UE FLE | 3 ECTS |

Master 2e année

Semestre 9

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| UE Micro-Nano Fabrication | 3 ECTS |
| UE Research training | 3 ECTS |
| UE Biosensors & high through-put analysis | 3 ECTS |
| UE Bio-molecular interactions : methods and applications | 3 ECTS |
| 3 option(s) au choix parmi 13 | |
| UE Fundamentals of structural biology | 3 ECTS |
| UE Characterization of bio-molecular interactions at surfaces | 3 ECTS |
| UE Optics for bio systems | 3 ECTS |
| UE Microfluidics | 3 ECTS |
| UE Physiology and neurosciences | 6 ECTS |
| UE Cell signaling | 3 ECTS |

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| UE Biostatistics, bioinformatics and molecular modeling | 6 ECTS |
| UE Biomaterials Engineering | 3 ECTS |
| UE Surface fonctionnalization and electrochemistry | 3 ECTS |
| UE Molecular markers for medical Imaging | 3 ECTS |
| UE Machine/statistical learning | 3 ECTS |
| UE Nano-pores and membranes technologies | 3 ECTS |
| UE autre parcours TC à choix ou MCMV mention Physique | 6 ECTS |

Semestre 10

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| 2 option(s) au choix parmi 1 | |
| UE Master thesis | 24 ECTS |
| 1 option(s) au choix parmi 4 | |
| UE Anglais | 3 ECTS |
| UE Capita selecta lectures in nanosciences | 3 ECTS |
| UE SET ou Phelma ou mention | 3 ECTS |
| UE FLE | 3 ECTS |