

Master in Nanosciences and nanotechnologies

Soft matter and biophysics 1st year

Presentation

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 the M2 Soft -Nano or 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.

his Master Course gives you the opportunity to apply to the thematic program "Futurprod" of the UGA Graduate School. The Graduate School@UGA is a new training program 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 embark on a PhD, or to have a direct professional insertion.

The program regroupes 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).

Registration and scholarships

Access conditions

- Entry in this 1st year program: 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

Continuing education: You must apply for the program under the continuing education category:

- 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 be admitted to this track, [you can undertake a validation of personal and professional achievements \(VAPP\)](#)

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

[skin.odf-uga:SKIN_ODF_CONTENT_PROGRAM_CANDIDATURE_LABEL](#)

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

Target group

Bachelors in Physics, with some knowledge and interest for biology, or bachelors in *Engineering (Chemical, mechanical, or nanotechnology engineering)*, joint Physics-Chemistry, or joint Physics-Biology programs. Students with four year bachelor degrees can be admitted under the Research Intensive Track program, which allows for more time in a research laboratories in

Expenses

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

Further studies

This track opens into M2 program such as NanoSoft or Nanobioscience. Nanomedecine is also possible.

Practicals informations :

- > Component : UFR PhITEM (physique, ingénierie, terre, environnement, mécanique)
- > level : Bacalaurate +4
- > Duration : 1 year
- > Course type : Initial and Continuing Education
- > Location(s) : Grenoble - Scientific Polygon

Contacts

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Program administration

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Continuing education manager

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Program

Master 1st year

Semester 7

UE Microscale mechanics and fluidics I : Mechanics	3 ECTS
UE Microscale mechanics and fluidics II: Fluidics	3 ECTS
UE Statistical physics I: Theory	3 ECTS
UE Surfaces and interfaces	3 ECTS
UE Statistical physics II : Computational aspects and introduction to AI	3 ECTS
2 option(s) to choose from 4	
GS_Soft-Nano_UE_Research Methodologies	6 ECTS
UE Quantum Physics I	3 ECTS
UE Solid State Physics I	3 ECTS
UE Optics	6 ECTS
UE Physics of biological systems	3 ECTS
UE Optic and magnetic spectroscopies	3 ECTS
UE Polymers 1	6 ECTS
UE Electrochemistry	3 ECTS
UE Physics of granular media	3 ECTS
UE Image and signal processing	3 ECTS
UE Molecular biology	3 ECTS
UE Molecular biology TP	3 ECTS
UE Research Intensive Track I	3 ECTS
1 or 2 UEs up to 6 ECTS in another program	
1 option(s) to choose from 1	
UE Occupational integration	3 ECTS

UE French as a foreign language	3 ECTS
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Semester 8

UE Research Internship	6 ECTS
UE Nanosciences I	3 ECTS
UE Nanosciences II	3 ECTS
UE Ray-Matter Interaction	3 ECTS
UE Soft Matter I	3 ECTS
UE Soft Matter II : statistical physics aspects; polymers	3 ECTS
UE Physical measurements at nanoscale by local probes	3 ECTS
1 option(s) to choose from 2	
UE Graduate School Soft Nano internship	6 ECTS
UE Research Intensive Track II	3 ECTS
UE Modelling and numerical simulations	3 ECTS
UE Cell biology	3 ECTS
UE Modelling in systems biology	3 ECTS
UE Experimental Protocol Design (in biology)	3 ECTS
UE Physiology & Bioenergetics	3 ECTS
UE Polymers 2 chemistry and physico-chemistry	3 ECTS
UE Surface functionalization and applications I	3 ECTS
1 or 2 UEs up to 6 ECTS in another program	