

SCIENCES, TECHNOLOGIES AND HEALTH

## Soft Nano 2nd year

Master in Nanosciences and nanotechnologies



**Target level**  
Baccalaureate  
+5



**ECTS**  
60 credits



**Duration**  
1 year



**Component**  
UFR PhITEM  
(physique,  
ingénierie, terre,  
environnement,  
mécanique),  
Grenoble  
INP, Institut  
d'ingénierie et  
de management  
- UGA,  
Grenoble  
INP - Phelma  
(Physique,  
électronique  
et matériaux),  
UGA



**Language(s) of instruction**  
English

## Presentation

The M2 track Soft-Nano is focused on soft and complex micro-nano-systems whose self-organization capabilities, fluctuating dynamics, and sometimes active properties, lead to specific and surprising effects at the nanoscale, and have enormous potential for innovation in materials science and engineering. This track provides a broad expertise in fundamental physics, mechanics, chemistry, and surfaces science as well as experimental skills with top-equipment and cutting-edge techniques for the characterization of soft nanostructures, still emphasizing the importance of numerical and modelling tools. It prepares to a career in fundamental research or R&D departments of industries. The broad scientific scope is appreciated in a wide range of industrial domains.

The curriculum contains:

- General courses including nanosciences and nanotechnologies specific to soft matter corresponding to 15 ECTS, among which 3 include the study of a foreign language
- Elective courses (totalizing 18 ECTS) for further specialization or opening in nanosciences
- Internships in research teams, 4 to 6 months (27 ECTS)

For more informations on this [track](#)

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

**International education** : Internationally-oriented programmes

## International dimension

- This track is affiliated to the Erasmus + master EMM Nanosciences and nanotechnologies. EMM Nano students join the track in the 2nd year

- Internships in research teams, 8 weeks the 1st year and 5 months the 2nd year, for preparing the master thesis

Physics, Physical chemistry, Materials Sciences, Chemical or mechanical Engineering

## Admission

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### Access conditions

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

Public continuing education: You fall under continuing education:

- if you resume your studies after 2 years of interruption of studies
- or if you followed training under the continuing education regime in one of the previous 2 years or if you are an employee, job seeker, self-employed person

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

For more information, see the web page of the [Continuing Education and Learning Department](#)

### Candidature / Application

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](#)

### Target

Master 1 program in soft condensed matter or a 4 years bachelor program (e.g. at least 240 ECTS) in

### Fees

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

## And after

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### Further studies

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 of nanotechnologies in soft condensed matter from bio-oriented to microelectronics fields as for example innovative coatings, nano-droplets, soft interfaces...
- Become an engineer in a company or an organism, in wide-range of domains of nanotechnologies such as energy, formulation, recycling...

## Useful info

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## Contacts

### Program director

Philippe PEYLA

✉ [philippe.peyla@univ-grenoble-alpes.fr](mailto:philippe.peyla@univ-grenoble-alpes.fr)

### Administrative contact

Registrar's Office for the Master in Nanosciences  
and nanotechnologies

✉ [phitem.master.nano@univ-grenoble-alpes.fr](mailto:phitem.master.nano@univ-grenoble-alpes.fr)

### Administrative contact

Application

✉ [phitem.candidature.etudiant@univ-grenoble-alpes.fr](mailto:phitem.candidature.etudiant@univ-grenoble-alpes.fr)

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## Partner schools

This program can be followed as part of a double degree in partnership with Karlsruher Institut für Technologie (KIT) (Germany). Professor in charge of the Double Degree: Mr. Ingo SCHIENBEIN

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## Course location(s) - City

📍 Grenoble

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## Campus

🏠 Grenoble - University campus

# Program

## Master 2nd year

### Semester 9

	Nature	CM	TD	TP	Crédits
UE Out-of-equilibrium Statistical physics	Teaching Unit (UE)				3 credits
UE Complex fluids	Teaching Unit (UE)				3 credits
UE Large Scale Facilities for Soft Matter	Teaching Unit (UE)				3 credits
UE Adhesion, friction, nanomechanics	Teaching Unit (UE)				3 credits
UE International School in Soft Nanoscience (ESONN)	Teaching Unit (UE)				6 credits
UE Introduction to Machine Learning and Deep Learning	Teaching Unit (UE)			8h	3 credits
UE Discrete and continuous modelling	Teaching Unit (UE)		18h		3 credits
UE Research training	Teaching Unit (UE)				3 credits
UE Micro-nano fabrication techniques	Teaching Unit (UE)			12h	3 credits
UE Advanced characterization for Nanostructures	Teaching Unit (UE)				3 credits
UE Thematic school in soft condensed matter	Teaching Unit (UE)		4h		3 credits
UE Nano-pores and membranes technologies	Teaching Unit (UE)				3 credits
UE Active matter	Teaching Unit (UE)				3 credits
UE Physics of biological systems	Teaching Unit (UE)				3 credits

UE Fundamentals of structural biology	Teaching Unit (UE)	11h	11h	3 credits
UE Nano-safety	Teaching Unit (UE)	19,5h	4h	3 credits
1 UE (6ETCS) OU 2 UE (2 UE de 3 ECTS) in an other program of the Nanosciences speciality or in another speciality	CHOICE			6 credits

## Semester 10

	Nature	CM	TD	TP	Crédits
UE Master Thesis	Teaching Unit (UE)				30 credits