Master in Nanosciences and nanotechnologies

Nanophysics - Quantum physics

Presentation

The M1 course "Nanophysics-quantum physics" offers fundamental courses in condensed matter physics (quantum physics, solid state physics) oriented towards the study of structured matter at the nanometer scale.

The objective of the Master 1 "Nanophysics-quantum physics" is to offer solid disciplinary skills in condensed matter physics supplemented by transversal skills (optional courses) adapted to the associated Master 2 courses: M2 Nanophysics, M2 Quantum Information-Quantum Engineering or M2 alternating micro and nanostructure engineering.

This course also aims to enable students to acquire a multidisciplinary approach thanks to a wide range of courses and practical work covering the entire disciplinary field of nanosciences. This master is strongly supported by research units in Grenoble working in this field, thus offering students numerous internship opportunities.

This course is open to international students. All courses are given in English.

The curriculum contains:

- General courses corresponding to 30 ECTS, 3 of which are devoted to the study of a foreign language
- Transversal courses in nanosciences and nanotechnologies (21 ECTS) with an emphasis on experimental teaching and projects on clean rooms and facilities in the Grenoble region
- Specific courses in nanophysics, (18 ECTS)
- Elective course (15 credits) for further specialization or an opening in Nanosciences
- Internships in research teams, 8 weeks in the 1st year and 5 months in the 2nd year, for the preparation of the master’s thesis. 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.

More information available here

The Master 2 Nanophysics associated with this M1 will provide students with skills in the development, nanofabrication, advanced characterization, understanding and exploitation of nano-systems, nano-materials, nano-structures and unique molecules, as well as knowledge of their potential applications.

This Master 1 allow student to choose one of the following Masters 2:

- The Master 2 Nanophysics: this international program aims to provide courses and training for elaboration, advanced characterization and deep studies of nanostructures physics like transport properties, optical and magnetic properties of nanostructures based on metal, dielectrics or semiconductors. This program is well suited to the needs of academic laboratories, offering many opportunities for internships or PhD programs. The multidisciplinary nature of the Nanophysics specialization will enable students to continue to deepen their knowledge by covering a wide range of research topics around nano-systems and their applications.
- The Master 2 quantum information and quantum engineering: this new Master 2 program aim to provide students with expertise at the interface between the fundamental and experimental aspects of quantum physics with the aim to control quantum systems and quantum bits in the vision of their applications in the field of communication and quantum information processing. It will also allow the opening of multidisciplinary
courses at the interface with mathematics and computer science. This program is fully consistent with the large developments in quantum technologies in Grenoble and worldwide. This program is well suited to the needs of academic laboratories, offering many opportunities for internships or PhD programs.

- The IMN Master 2: The aim of this master's degree alternating is to provide multidisciplinary training in physico-chemistry, ranging from the development of nanomaterials and thin films and the associated characterizations (chemical, optical, microscopy) to several application fields related to different industrial sectors (mainly microelectronic components and photovoltaics).

Registration and scholarships

Education requirements:
- For the first year: holders of a bachelor degree in life sciences, or equivalent diploma

Admission criteria:
- See the section on applications and registration

For candidates whose country of residence is not included in the "Studies in France" portal (PEF) scheme, the calendar for the eCandidat application campaigns is available [here](#).

Public continuing education: You are in charge of continuing education:
- if you resume your studies after 2 years of interruption of studies
- or if you followed a formation under the regime formation continues one of the 2 preceding 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)

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](#).

Further studies

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Practicals information:

- Component: UFR PhITEM (physique, ingénierie, terre, environnement, mécanique)
- Level: Baccalaureate +5
- Duration: 2 years
- Course type: Initial and Continuing Education
- Location(s): Grenoble - University campus

Contacts

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