



Campus Rive Gauche University Paris Diderot Paris 7



Politecnico de Turin



Admission:

The admission is done by submitting the candidature to the responsible of the corresponding institut.

The course is addressed to students that have validated a Bachelor degree (equivalent to three years education in a University).

Web site of the Master: <http://www.nanoquadf.fr>

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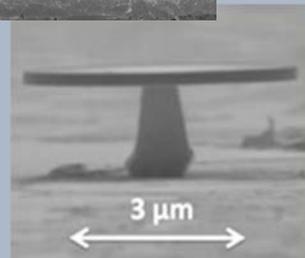
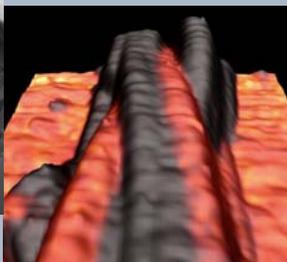
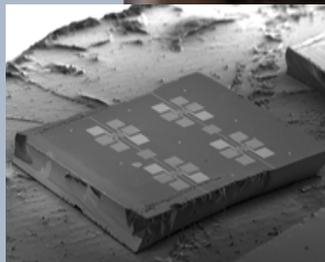
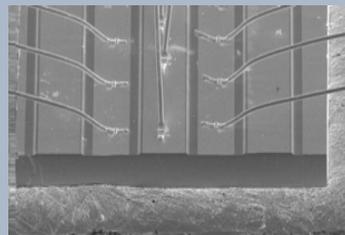
International Master Program Nanotechnologies and Quantum Devices NANOQUAD

Theoretical and experimental formation on
quantum devices and nanotechnologies

Paris Diderot University
Politecnico de Turin

All courses given in english

Web site : <http://www.nanoquadf.fr>





'Nanotechnologies and Quantum Devices' (NanoQuad) is an international double degree master program completely taught in English, for students having a Bachelor degree.

The NanoQuad program aims to give a high level theoretical and experimental training on different kind of quantum phenomena with a particular attention to quantum devices and nanotechnologies. In this domain fundamental and applied researches enrich each other: theoretical advancements are accompanied by the progress in material science and by the realization of new and unique experimental techniques. These advancements, awarded with several Nobel prizes, have had important consequences in fundamental physics; we are able to observe and manipulate single atoms or conceive quantum devices, such as semiconductor sources and detectors, superconducting circuits for quantum information, hard disks based on giant magnetoresistance,

The aim of the program is to create a professional figure having the complementary competences of a modern **quantum physicist** and a **physical engineer** in the area of nanotechnology-based quantum devices.

At the issue of the two-year program the succeeding students will receive a double degree : the **Italian Laurea Magistrale (Master degree) 'Nanotechnologies for ICTs'** and the **French Master Degree 'Dispositifs Quantiques'**.

Enrolled students will follow 1st year courses in Turin and 2nd year courses in Paris, fully exploiting the teaching and experimental facilities of two outstanding European Universities and enjoying a fascinating experience in a really international environment.

After the master's degree, the students can be directly employed as specialized scientists or engineers in High-Tech Industries, or start a PhD thesis work in outstanding public or private research laboratories in France and abroad.

1st Year Syllabus in Turin

FIRST TERM (September- January)
(30 ECTS)

- Solid State Physics and Electronic devices
- Materials and characterization for Micro and Nanotechnologies
- Photonic Devices
- Finite element modelling or Stochastic Process

SECOND TERM (January-June)
(30 ECTS)

- Electronic Properties of Materials
- Microelectronics devices
- Physics of technological processes for Micro & Nano systems
- Micro & Nano systems
- Bioinformatics or Electromagnetic fields and biological tissues: effects and medical applications or Nanomaterials and nanotechnologies for energy applications

2nd Year Syllabus in Paris

FIRST TERM (September- January)
(30 ECTS)

- Electrons and phonons in nanostructures
- Quantum theory of light
- Advanced solid state physics
- Photonic quantum devices
- Electronic quantum devices
- 2D materials
- Imaging nano-objects
- Experimental projects on nanosciences
- Visit to Labs

SECOND TERM (January-June)
(30 ECTS)

- Quantum computing
- Quantum information
- Nanomagnetism and Spintronics
- Functionals Materials
- Research Project (Internship)

