



## MASTER'S DEGREE in Nanoscale Engineering

Master accredited by the French Ministry of Higher Education and Research with possibilities to continue studies towards a PhD.

**3** academic centres  
in and around Lyon

**5** research laboratories  
of the Université de Lyon

**4** semester courses,  
taught in English

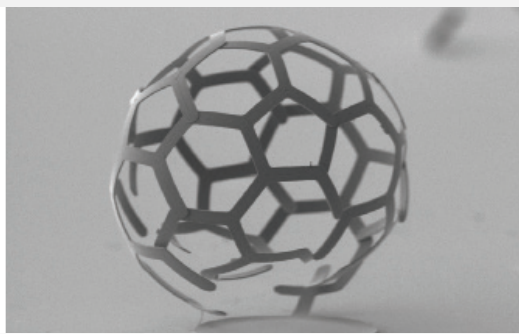
**9** months of internships  
and lab projects

**194** graduates since 2011  
56% of them are  
International Students

### Initial and continuous training

#### Objectives

- ▶ Training in Nanotechnology for future managers, engineers and research scientists, to master recent developments in nanotechnology and biology.
- ▶ Graduates will be able to manage multidisciplinary international projects at the interface of these various disciplines.



#### Main opportunities

- ▶ **Industrial:** Electronics, Materials (Development and Applications), Biotechnology (Analysis and Pharmacology), Tools and Processes (Characterization and Processes).
- ▶ **PhDs and Scientific careers:** most NSE graduates go on with PhD studies. High demand for Master's level teachers in NSE for young scientists in the early stages of training.

#### Scientific fields

Biology-Biochemistry, Chemistry, Electricity-Electronics Control Engineering, Materials Science, Physics, Engineering Science.

#### Prerequisites

- ▶ Bachelor of Science. (Preferably in Physics, Chemistry, Bioengineering, Electronics, Materials Science, Mechanical Engineering).
- ▶ Certified B2 level in English (CEFRL).





## Key points of the NSE program

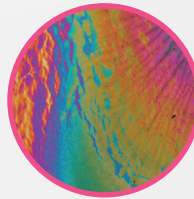
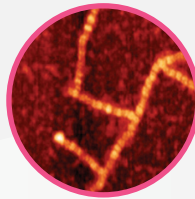
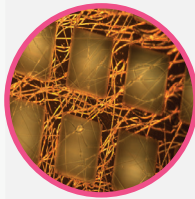
An international, multicultural program for French and international students.

- ▶ A major focus on developing scientific communication skills in English, thanks to high-level scientific teaching given in English. Opportunities for internships and employment abroad.
- ▶ Five laboratories involved in the Lyon area: the Lyon Institute of Nanotechnology (INL), the Institute of Light and Matter (ILM), Materials: Science and Engineering (MATEIS), the Laboratory of Multimaterials and Interfaces (LMI), and the Institute of Analytical Sciences (ISA).
- ▶ Regular interactions with internationally renowned research groups and a wide range of contacts in industry and universities abroad.
- ▶ The Master's degree is awarded by Université de Lyon. Training courses and projects throughout the academic year for high-level scientific and managerial careers in research laboratories and industry.

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S 1	Micro and Nano Fabrication	Characterisation Tools for Nanostructures	Surface Physics	Fundamental Basis of Science Biomolecules, Cells and Biomimetic Systems Quantum Engineering Physics of Semiconductors (Part 1) Courses in other Masters	Transcultural Project	Language (French for foreign students or English for French students)
S 2	Nanomechanics Drug Delivery Systems Introduction to System Design		Project Management Workshop		Lab Project 1	Language (French for foreign students or English for French students)
S 3	Micro, Nano-Photonics and Applications Surface Analysis Techniques Physics of Semiconductors (Part 2) Functional Materials Biosensors and Biochips Courses in other Masters		Nanoelectronics and Information Technology Nanomagnetism and Spintronics Computer Modelling of Nanoscale Systems Tissue and Cell Engineering Micro-and Nano-fluidics Courses in other Masters		Intellectual Property & Ethics	
S 4	Internship + Thesis					

- Mandatory courses
- Professionalization courses
- Transcultural project & language
- Internships and lab projects
- Major ECTS (3 courses among the list each semester)
- Minor courses (S2 : 2 courses among the list / S3 : 3 courses among the list)



### Wide-range of skills

- ▶ Working effectively in the field of Nanostructures, with solid knowledge of Nanoscience and Nanotechnology: Characterization, Modelling, Engineering.
- ▶ Project management: in academic or industrial research teams.
- ▶ A grasp of complex problems.
- ▶ Innovation: ability to solve problems and to manage risk, ability to think creatively and critically, use of research techniques.
- ▶ Designing, setting up and managing cross-disciplinary and international projects.
- ▶ Taking on board socioeconomic factors and market requirements.

### Contacts

- Program managers
- Bertrand Vilquin (ECL), Vincent Salles (UCBL)
- Patrice Chantrenne (INSA)
- Management of applications
- Adeline Trenner (ECL)

More information: <http://master-nano.universite-lyon.fr>

