

## ADMINISTRATIVE STAFF

Faculty of science and Technology  
Electronics, electrical energy, automatic Department

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For more information:  
<https://master-electronique.univ-lille.fr/master-nanosciences-et-nanotechnologies>

## CONTACT CONTINUING EDUCATION & WORK-STUDY

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## ADMISSION CONDITIONS

Find all the useful information in the training catalog of the University of Lille: <https://www.univ-lille.fr/formations>

### MASTER'S 1

- Recommended Bachelor's degree in:
  - Electronics, Electrical
  - Energy, Automation (EEA), Engineering Sciences with EEA profile, or Physics

CAPACITY OF RECEPTION: 16 slots

RECRUITMENT CALENDAR: Opening from 03/05/2023 to 12/06/2023

ADMISSION PUBLICATION: 03/07/2023

### SELECTION PROCESS:

- application + interview
- Application criteria for the jury: A detailed file of the curriculum followed by the candidate allowing to appreciate in particular the objectives and competences of the previous training - recommended

### PREREQUISITES:

- «Electronic components and circuits», «electronic components and circuits», «Semiconductor physics», «Wave theory», «Propagation», «Signal processing», «Fundamentals of electronic theory», «Basics of information theory», «Digital transmissions».

Submit your application on the platform <https://ecandidat.univ-lille.fr>

### MASTER'S 2

Find out more about the different ways of accessing the Master's 2 program by consulting the training catalog of the University of Lille. Submit your application on the platform <https://ecandidat.univ-lille.fr>

## RESPONSABLES DE LA FORMATION

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Head of the Master 1  
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## STUDY ARRANGEMENTS

In order to offer the best success conditions to incoming students, the University of Lille has set up various measures that allow students to start and continue their studies in the best possible way, depending on their situation: students with disabilities, high-level athletes and artists, civic service, students in exile, etc. More information on <https://www.univ-lille.fr/etudes/amenagements-des-etudes/>



Information and knowledge society



Master

MASTER 1 / MASTER 2

*Mention*

Nanosciences and Nanotechnologies

*Parcours*

E - TECH ELECTRONIC  
TECHnologies for  
smart systems



## PRESENTATION OF THE MASTER'S PROGRAM

The Electronic TEChnologies (ETECH) for smart systems specialty of the Nanosciences and Nanotechnologies (NN) Master's degree aims to train highly skilled technical and scientific engineers through and for research. ETECH engineers can hold leader positions in the R&D laboratories of large groups in microelectronics or SMEs as well as academic research laboratories. The training focuses on technological innovation to meet the current and future needs in many high technological areas (5G, 6G telecommunications, health, sustainable development, Energy, transport, etc.). The NN Master's program proposes to bring scientific and professional skills to meet these future challenges with a strong purpose in high-technology startup launching as well as international careers. An example of the evolution in the field of microelectronics is the development of 5G communication networks. These future networks will require the development of ultra-high speed wireless communications systems, but not only. Future needs will lead to a diversification of electronic systems. For example, the autonomous car connected to networks will require an increase in information flows, less energy-consuming processing of this information using artificial intelligence (software but also hardware with neuromorphic circuits), new sensors and actuators, micro-sources of energy... This 2-year training (120 ECTS) is based on one of the biggest laboratories of the University of Lille, the Institute of Electronics, Microelectronics and Nanotechnology (IEMN, <https://www.iemn.fr>). With more than 50 years of experience in microwave and more than 30 years in nanotechnologies, it is an important support for training, because it has several highly equipped platforms (1600m2 clean room, characterization center, etc.). The main training axis of master NN are inspired by the advanced research flagships of IEMN Smart Energy, IOT make sens, Telecom UHD, Neuromorphic technologies. As the thematic of research & development are strongly international, it is therefore important to master English, which is why courses are given in English.

## THIS MASTER DEGREE PROGRAMME IS PART OF THE GRADUATE PROGRAMMES «SCIENCE FOR A CHANGING PLANET» and «INFORMATION & KNOWLEDGE SOCIETY»

GRADUATE PROGRAMMES of the University of Lille offer to master students and PhD's a training environment through research-driven approach in an international, stimulating, competitive and innovative context as well as professional networking for successful career planning.

### Key figures :

#### Graduate Programme SCP:

- 9 master tracks in Physics, Chemistry, Biology and Earth Sciences
- 1 Graduate School

#### Graduate Programme IKS:

- 10 master tracks in Mathematics, Physics, Nanosciences, Biotechnology, Philosophy and Psychology
- 3 Graduate Schools

**Scholarship :** The Graduate Programmes offer fellowships (3500 euros) and relocation (3500 euros) grants to attract bright students in their master tracks, as well as outgoing mobility grants (max 3000 euros) to its registered students.

- Fellowship and relocation grant : 1st call (31/03, results 15/04), 2nd call (15/05, results 01/07)

**More information:** <https://international.univ-lille.fr/en/graduate-programmes/science-for-a-changing-planet/>



## STRUCTURE OF THE PROGRAM

The master's program is organized in 4 semesters of 30 ECTS.

The first semester shares a common core with the Networks and Telecommunications Master's degree. An important direction of future technologies is the communication of information. The program belongs to the I-SITE ULNE IKS international program and is in English. It is open to international outgoing mobility and scholarships. The master's degree has a teaching agreement with the Ecole Centrale de Lille and with the Institut Supérieur de l'Electronique et du Numérique (ISEN). Part of the teaching is provided by the Ecole Centrale de Lille. The program is offered in double degree with the Georgia Institute of Technology (USA)

## JOB PLACEMENT RATE & FURTHER STUDIES

**96% job placement rate (OFIP)**

### Targeted positions:

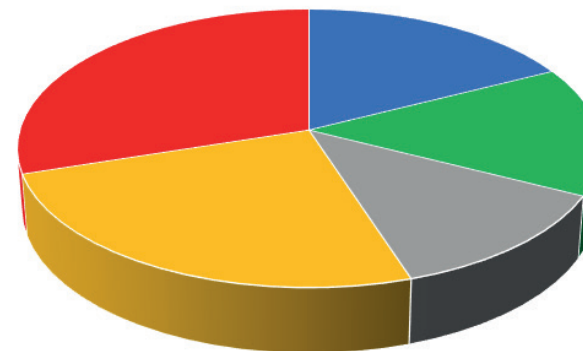
Design engineer in connected objects, Engineer in cleanroom processes, wireless communicating sensors, electronic circuits, RF/Microwave, RF/Microwave test, project manager, consulting engineer, Research & Development, researcher etc.

Major industrial groups or SMEs or startups that recruit our expert engineers: Thales, Freescale, STmicroelectronic, NXP, OMMIC, UMS, Alstom, AMD, CEA, MC2, Huawei, SOITEC, EPIGAN, etc. and regional startups (Zymoptic, Vmicro, Wavely, Besttic, Menapic, etc.

Doctoral studies: At IEMN, doctoral studies with industrial partners (CIFRE or other contracts), numerous PhD grants (30 to 40 per year), or other academic laboratories (e.g. CEA, IRCICA-CNRS, IFSTTAR, etc.) or private laboratories (e.g. Thales, STmicroelectronics, MC2, etc.)

## TARGETED SKILLS

The Nanosciences and Nanotechnologies specialization is structured in blocks of skills and knowledge defining the core of their expertise in the sector of technologies for electronic systems.



■ **Appropriate the novel and innovative technologies (21ECTS)**

■ **Master the tools for signal processing, modeling and equipment driving (18ECTS)**

■ **Master the multiphysics and integration of devices (15ECTS)**

■ **Design communicating objects (30ECTS)**

■ **Manage personal, technical and scientific projects (36ECTS)**

## STRENGTHS OF THE PROGRAM

- Rely on the expertise of an application-oriented laboratory in partnership with major players in the field of microelectronics and startups in the Hauts-de-France region. Training led by a dynamic teaching team with recognized expertise and an active pedagogy: supervised or independent projects using professional tools, internships in companies, and seminars led by high-level professionals. 25% of the program is done through practical work.
- Accessible with study-work students (1 week in a company and 1 week in the training center) in the form of an apprenticeship contract for M1-M2 or M2 and a professionalization contract for M2