Université de Lille

Electronic technologies for smart communicating systems

Master Nanosciences et nanotechnologies

Durée
2 ans

Composante
Faculté des sciences et technologies

Langue(s) d'enseignement
Anglais

Présentation

The **Electronic TECHnologies (E-TECH) for Smart Communicating Systems** specialization within the **Nanosciences and Nanotechnologies (NN) Master**'s program at the University of Lille is designed to inspire and prepare highly skilled technical and scientific engineers for the exciting world of research and innovation. ETECH graduates are prepared to take on leadership roles in the laboratories of major corporations in the microelectronics sector, as well as in small to medium-sized enterprises (SMEs) and academic research institutions. Our program places a strong emphasis on technological innovation to address the current and future demands of various high-tech domains, including 5G and 6G telecommunications, IOT, healthcare, sustainable development, energy, transportation, and more. The NN Master's curriculum is specifically tailored to equip students with the scientific and professional skills required to meet these upcoming challenges, with a particular focus on nurturing high-tech startups and fostering international careers. A prime example of the exciting transformations happening in the microelectronics field is the evolution of 5G communication networks to 6G. The future of these networks demands the creation of ultra-high-speed wireless communication systems, but that's not all. It also necessitates the diversification of electronic systems, such as the development of autonomous vehicles connected to networks, which will require increased information flow, energy-efficient processing of data using artificial intelligence ; (both in software and hardware, including neuromorphic circuits) , new sensors, actuators, and micro-sources of energy. Our comprehensive two-year program (equivalent to 120 ECTS) is based in one of the largest and most prestigious laboratories at the University of Lille, the Institute of Electronics, Microelectronics, and Nanotechnology (IEMN).With over 50 years of expertise in microwave technology and more than three decades in nanotechnologies, the IEMN provides invaluable support for our students. The institute is composed on state-of-the-art facilities, including a 1600m2 clean room and advanced characterization centers, enabling hands-on research and learning experiences. The core focus areas of our NN Master's program draw inspiration from the advanced research initiatives of IEMN, encompassing IOT MakeSense, Telecom UHD and Neuromorphic Technologies. Given the international scope of research and development in these areas, mastering the English language is of paramount importance. Therefore, our courses are conducted in English to ensure our students are well-prepared for the global stage. Join us at the University of Lille and embark on an educational journey that will empower you to shape the future of electronic technologies and smart systems, positioning you at the forefront of innovation in the ever-evolving landscape of high technology. Your adventure begins here at the intersection of science, technology and imagination.

Savoir-faire et compétences

The **Master's degree in Nanosciences and Nanotechnologies** is structured in blocks of skills and knowledge defining the core of their expertise in the field of technologies for electronic

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Dernière mise à jour le 15 janvier 2026

systems: acquire the fundamentals of microelectronics and nanoelectronics, design a communicating object, implement clean room processes, master microwaves, conduct research on materials, devices and systems, manage a personal, technical and scientific project

Dimension internationale

Formation ouverte aux étudiants internationaux.

Les + de la formation

Relies on the expertise of an application-oriented laboratory in partnership with major players in the field of microelectronics and startups in northern France (Hauts-de-France) Training achieved by a dynamic teaching team with recognized expertise and active pedagogy: supervised or autonomous projects conducted with professional tools, internships in companies, and seminars provided by high-level professionals. 40% of the training is done through practical work, projects, including access in the cleanroom. Accessible in apprenticeship (1 week in a company and 1 week in University) in the form of an apprenticeship contract.

Organisation

Organisation

The master is organized in 4 semesters of 30 ECTS Training in English, open to the international, labelled I-SITE ULNE. Possibility of scholarships and international mobility grants from the graduate programmes.
The master is co-accredited with the Ecole Centrale de Lille and conventioned with the Higher Institute of Electronics and Digital (ISEN). Part of the teaching is provided by the Ecole Centrale de Lille. The master has a partnership with Batanga State University - Philippines.

BCC - Acquire the fundamentals of microelectronics and nanoelectronics

RNCP38691BC02 - Mobilize and produce highly specialized knowledge
RNCP38691BC05 - Identify issues in nanoscience and nanotechnology

BCC - Design a communicating object
RNCP38691BC05 - Identify issues in nanoscience and nanotechnology
RNCP38691BC07 - Implement methods and tools in nanoscience and nanotechnology

BCC - Implement clean room processes
RNCP38691BC07 - Implementing methods and tools in nanoscience and nanotechnology

BCC - Master microwaves
RNCP38691BC07 - Implementing methods and tools in nanoscience and nanotechnology

BCC - Conduct research on materials, devices and systems
RNCP38691BC02 - Mobilize and produce highly specialized knowledge
RNCP38691BC05 - Identify issues in nanoscience and nanotechnology
RNCP38691BC06 - Analyze issues in nanoscience and nanotechnology
RNCP38691BC08 - Manage technical innovations in the field of nanoscience and nanotechnology to leverage them in industry or research

BCC - Manage a personal, technical and scientific project
RNCP38691BC01 - Implement advanced and specialized uses of digital tools
RNCP38691BC03 - Implement specialized communication for knowledge transfer
RNCP38691BC04 - Contribute to transformation in a professional context
RNCP38691BC06 - Analyze issues in nanoscience and nanotechnology
RNCP38691BC08 - Manage technical innovations in the field of nanoscience and nanotechnology to leverage them in industry or research

Ouvert en alternance

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Type de contrat : Contrat d'apprentissage, Contrat de professionnalisation.

1 week in a company and 1 week in University

Stages

Stage : Obligatoire

Projet de laboratoire (S2), projet de recherche (S3) et stage obligatoire (S4)

Admission

Conditions d'admission

For European students an no EEF students: Application: Submit your application by following this link: https://monmaster.gouv.fr
For EEF students: Etudes en France : https://www.campusfrance.org/fr/candidature-procedure-etudes-en-france
Number of places in the training course : 16

Et après

Poursuite d'études

A PhD at IEMN with an industrial partner (CIFRE or other contracts), many funded theses (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.)

Insertion professionnelle

Targeted jobs : Design engineer of connected objects, Cleanroom Process engineer, Developer of wireless communicating sensors, electronic circuits, RF/microwaves circuits and systems, Microwaves, RF / Microwave test, Project Manager, Consulting Engineer, EN??? Researcher. Where : large industrial groups or SMEs or startups that recruit our expert engineers : Thales, Freescale, STmicroelectronic, Infineon, NXP, OMMIC, UMS, Alstom, AMD, CEA, MC2, Huawei, SOITEC, EPIGAN etc. and regional startups (Zymoptic, Vmicro, Wavely, Besttic, Menapic...)

Pour en savoir plus sur l'insertion professionnelle des diplômés de l'Université de Lille, consultez les répertoires d'emplois publiés par l'ODiF (Observatoire de la Direction des Formations)

Les fiches emploi/métier du Répertoire Opérationnel des Métiers et des Emplois (ROME) permettent de mieux connaître les métiers et les compétences qui y sont associées.

Infos pratiques

Autres contacts

Contact administratif et pédagogique :

FST-master-nn-etech@univ-lille.fr

Établissement(s) partenaire(s)

École centrale de Lille
https://ecole.centralelille.fr/

Institut supérieur de l'électronique et du numérique
https://www.isen.fr/

Lieu(x)

Villeneuve d'Ascq

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Campus

Campus Cité scientifique

En savoir plus

Faculté des Sciences et Technologies - FST
https://sciences-technologies.univ-lille.fr/

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