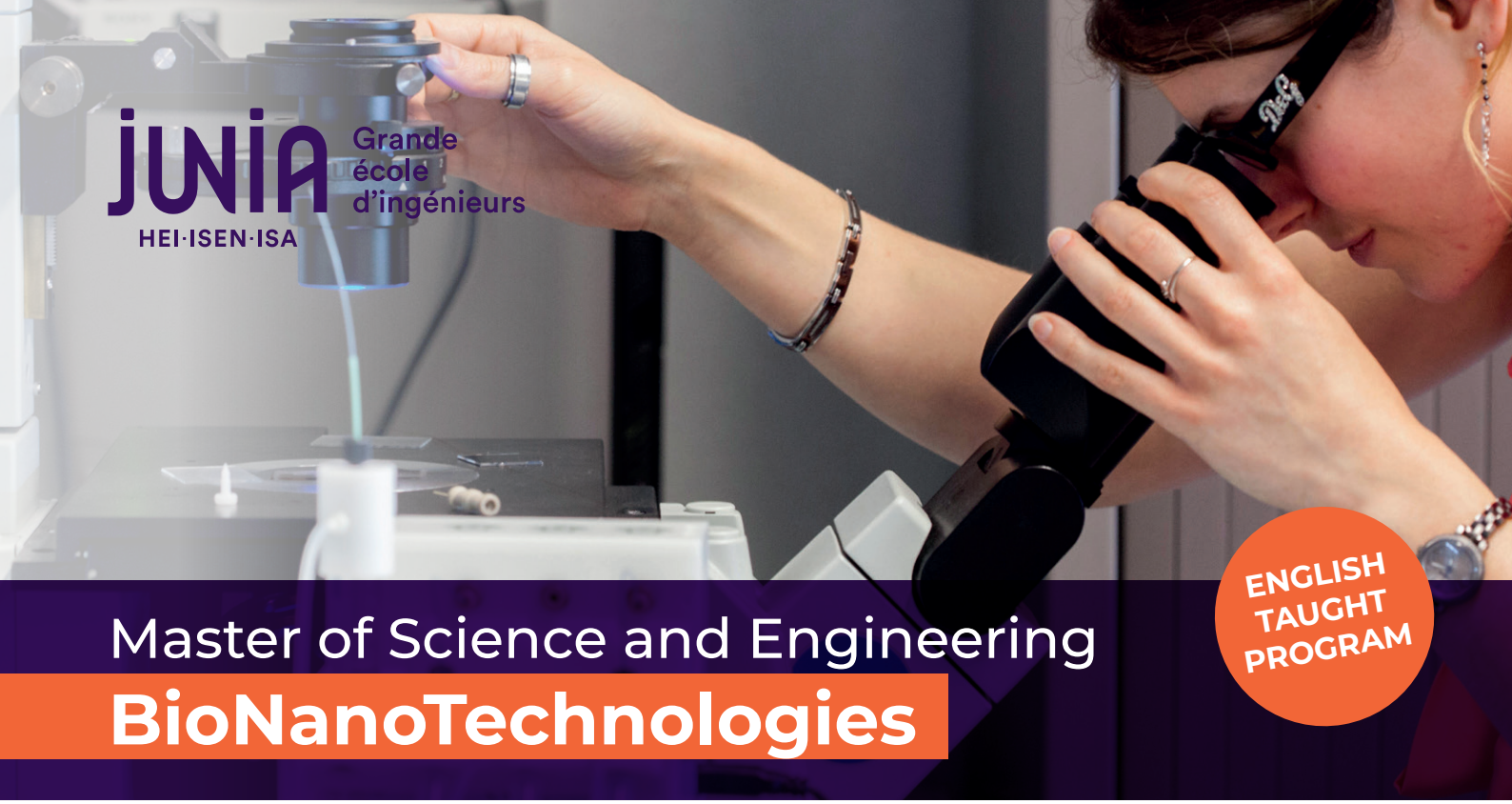

JUNIA Grande école d'ingénieurs
HEI·ISEN·ISA

ENGLISH TAUGHT PROGRAM

Master of Science and Engineering
BioNanoTechnologies

BioNanoTechnologies (BNT) are at the crossroad of Nanosciences, Biology, Electronics and Information Technology. Thanks to this multidisciplinary approach, BNT bring disruptive innovations in the fields of health, consumer electronics, security, communications, energy harvesting, environment. During this Master you will learn methods for designing, modeling, building measurement setups, fabrication of sensors, components and systems as well as a glimpse of quantum technologies. Projects and trainning periods are research-oriented and will make you prepared for R&D in the industry or continue towards a PhD.

active pedagogy

BioNanoTechnologies Master Program is research-oriented and thus prepares students for Research and Development positions and/or pursuing their studies through a PhD.

LEARNING BY DOING

- Strong link with researchers and Labs:
  - Institut d'Electronique, Microélectronique et de Nanotechnologies)
  - OncoLille
- Multidisciplinary and sound scientific trainning

projects

Semester-long team projects are an integral part of the curriculum. One day per week is dedicated to group projects in collaboration with a professional expert, partner company, or research institute and supervised by a JUNIA ISEN faculty member.

EXAMPLES OF PROJECTS

- Design of a pressure sensitive Lab-on-Chip for drug screening
- Radiofrequency Switches modeling for 5G and beyond...
- Optical modeling of organic solar cells
- Modeling and study of a thermal characterization method
- Study of the vibrations of living tissue by laser vibrometry
- Microfluidic devices for DNA extraction from soil and water
- Study of acoustic submarine measurement techniques
- Thermal measurement of phase change memory materials

internships

Students spend 40% of the program immersed in real professional experience. These internships, carried out either in France or abroad, in a company or research center, expose students to the current reality of working and prepare them for entry into the global workforce.

EXAMPLES OF INTERNSHIPS

- Design and prototyping of bio-sensors
- Microelectronics industry
- Organ-on-Chip modeling and design
- Automation of an optical detector of enzymatic activity
- Design of a radiofrequency filter for space applications
- Air quality monitoring by machine learning
- Thermoelectric materials characterization
- 3D printing of biocompatible materials

career prospects

BioNanoTechnologies are the heart of innovation in the fileds of health, energy, electronics, security, defense and environment. Masters students for the Master usually follow either (~50%) the path of cutting edge technology R&D in the industry. Examples: Thales, Safran, Tesla, STMicroelectronics, Dassault. The other 50% continue their training in research by a PhD which takes place either in industry or academia.

In addition to exceptional technical knowledge and managerial skills, JUNIA ISEN graduates are prepared for the reality of the professional world even before they get their diploma, which is why 100% of JUNIA ISEN alumni are employed within 6 months of graduating. JUNIA ISEN's more than 26,000 alumni around the world work for some of the biggest names in electronics and digital technology or join and create their own startups thanks to the entrepreneurial mindset cultivated at JUNIA.

Practical information

admission requirements

- Bachelor's Degree in Physics, Electronics or equivalent,
- English B2 level certified by an official test IELTS, TOEIC, TOEFL IBT or FIRST
- Knowledge of French language is recommended, but not required for admission

application procedure

- Complete your online application on junia.force.com
- Have an individual interview (video conference)
- Application deadline: **May 15th, 2023**

financial aspects

Fees and other expenses

- 2-year Program Costs: €18,000
- Living expenses in France: approx. €850/month
- Miscellaneous fees (insurance, visa...): approx. €650/year

Scholarships and Financial Aid

- Scholarships: refer to your local French embassy or Campus France Office
- Paid internships if carried out in France: min. €555/month
- French government housing allowance: approx. 90€/month

MASTER 1

		ECTS
Fall Semester	Semiconductors physics and components	3
	Design of Bio-MEMS Systems	3
	Hands-on 32-bit ARM microcontrollers	2
	Quantum Communications	2
	Wireless Technologies & Applications	3
	French as Foreign Language classes	3
	Project – Literature survey and planning	4
Spring Semester	Energy Harvesting	2
	Digital Microelectronics Circuits	3
	Waves and Components (Labs)	3
	MEMS Applications: Biology and clinics	3
	Quantum Computing	2
	Artificial Intelligence	3
	Audio Signal Processing	2
	Humanities and Management	5
	Project – Implementation	7
Summer Internship	14-week internship	10

MASTER 2

		ECTS
Fall Semester	Microelectronics	3
	Optoelectronics	3
	Sensors and actuators, mechanics, acoustics	3
	Advanced Electronics	3
	Neuromorphic Computing	2
	Humanities & Management	5
	French as a Foreign Language classes	2
	Innovation Project	9
Spring Semester	Six-month Internship	30

*Course details are subject to change, please visit **junia.com** for the latest information*

international student services

Dedicated support just for you

- Reservation of accommodation in a student residence
- Administrative procedures (visa, resident permit, etc.)
- Integration into student life (associations, activities, etc.)
- Welcome Session: intensive French language course, intercultural communication, orientation week, social events, and more

JUNIA Grande école d'ingénieurs
HEI·ISEN·ISA

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Cti Commission des titres d'ingénieur

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