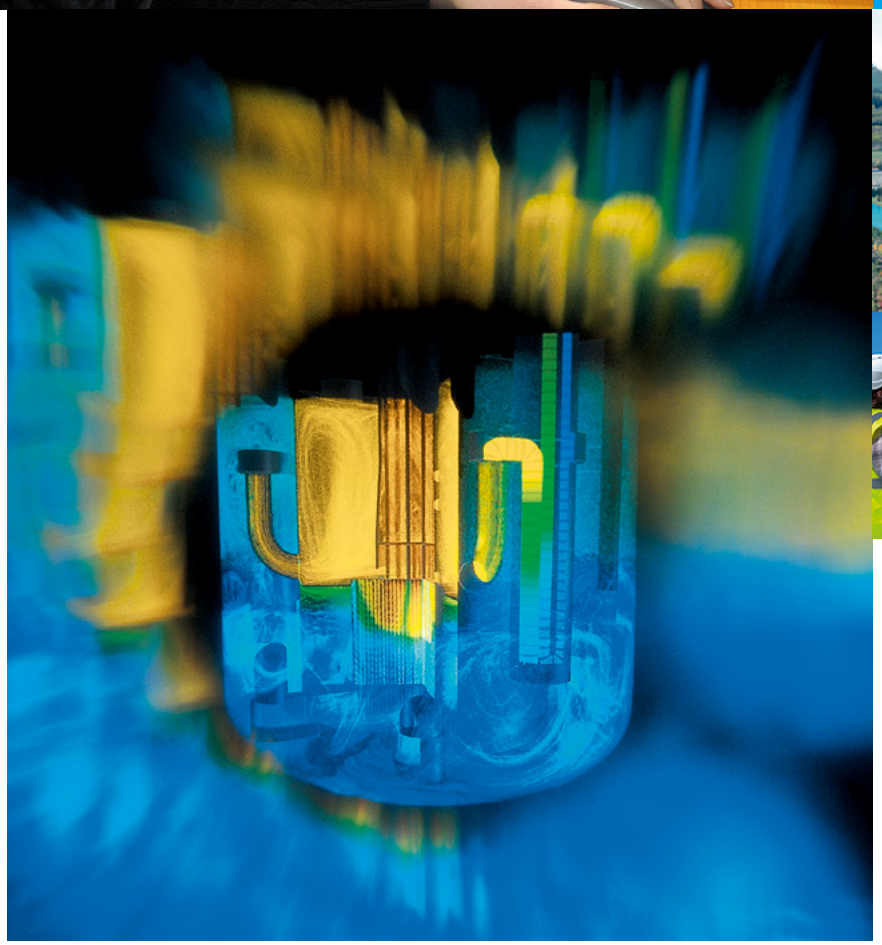
"Become an actor of the low-co_2 energy production, join a scientific and technological community to build the nuclear power of the future"

MASTER OF SCIENCE NUCLEAR ENERGY

NUCLEAR ENERGY: A RELIABLE SOURCE FOR LOW-CO_2 ENERGY STRATEGY



An International Master Programme

– Taught in English;
– Accredited by top-ranked French Universities and Engineering Schools;
– Supported by the French nuclear industry and research sector;
– Certified by the International Nuclear Energy Institute and the European Institute of Innovation & Technology;
– Sponsored by the Programme science et enseignement EDF-Institut de France-Académie des Sciences.

SCIENCE & ENSEIGNEMENT

MNE, what are the skill outcomes?

- Improve safety: nuclear reactor design, nuclear reactor operation (normal, incidental, accidental and post-accidental situations);
- Build and optimize the 3rd generation advanced nuclear reactors;
- Design innovative reactors: Small Modular Reactors (SMR), Molten Salt Reactors (MSR), Generation IV…;
- Build and optimize new storage capacities, new waste disposal repositories and casks for transport;
- Reduce the radiotoxicity of waste;
- Operate a reactor fleet by taking into account the new energy mix context;
- Dismantle the old nuclear plants.

MNE, for which careers?

- Design and engineering;
- Operation of nuclear facilities and dismantling works;
- Research & Development, Education (after a PhD).

Employment needs and area

- 4 000 engineers to be recruited/year;
- 3 000 French nuclear sector firms everywhere in France. Different sizes, from 5 to 150,000 employees;
- 53% of the French nuclear sector firms currently engaged in international projects.

STARTING SALARIES **€35,000/ YEAR** ON AVERAGE

The Master of Science Nuclear Energy (MNE) has been created to train young engineers and researchers for the strong needs of Nuclear Engineering.
The MNE is a two-year Master programme (referred to as M1 for the 1st year and M2 for the 2nd year). Each year accounts for 60 ECTS (*European Credit Transfer and Accumulation System*). The MNE is awarded at the end of M2 for students who have obtained the 120 ECTS required for a master degree.
The MNE is a French diploma which is issued by the Université Paris-Saclay, the Institut Polytechnique de Paris, the Université Paris Sciences et Lettres and the École des Ponts ParisTech.

TITLE OF THE DIPLOMA :
"INGÉNIERIE NUCLÉAIRE"

M1 CONSISTS OF 2 TRACKS SHARING COMMON COURSES

M1 TRACKS

Physics

Chemistry

M2 CONSISTS OF 5 TRACKS SHARING COMMON COURSES

M2 TRACKS

Nuclear Decommissioning and Waste Management, NDWM

Nuclear Fuel Cycle, NFC

Nuclear Plant Design, NPD

Nuclear Plant Operation, NPO

Nuclear Reactor Physics and Engineering, NRPE

MNE programme for acquiring a strong scientific background as well as operational skills

MNE general frame

M1 NUCLEAR ENERGY
60 ECTS

1 track = Common + Specific courses + Intership

Common courses
31 ECTS
Located at INSTN Saclay

Chemistry track
20 ECTS
At INSTN Saclay and Faculté d'Orsay

Physics track
20 ECTS
At INSTN Saclay and Faculté d'Orsay

Internship (10 weeks min.)
9 ECTS

M2 NUCLEAR ENERGY
60 ECTS

1 track = Common + Specific courses + Intership

Common courses
18 ECTS (NRPE)
20 ECTS (NDWM, NFC)
25 ECTS (NPD, NPO)
Located at INSTN Saclay

Nuclear Decommissioning and Waste Management (NDWM)
at CentraleSupélec and Ecole des Ponts Paris Tech
22 ECTS

Nuclear Fuel Cycle (NFC)
at Ecole Nationale Supérieure de Chimie de Paris
22 ECTS

Nuclear Plant Design (NPD)
at Ecole Nationale Supérieure des Techniques Avancées
17 ECTS

Nuclear Plant Operation (NPO) at CentraleSupélec
17 ECTS

Nuclear Reactor Physics & Engineering (NRPE)
at INSTN Saclay
24 ECTS

Internship (20 weeks min.)
18 ECTS

MNE programme designed by 7 well-known establishments:

- CentraleSupélec (CS/Université Paris-Saclay)
- Ecole Nationale Supérieure de Chimie de Paris (also called Chimie Paris Tech/Paris, Sciences et Lettres)
- Ecole Nationale Supérieure des Techniques Avancées (ENSTA-Paris/Institut Polytechnique de Paris)
- Ecole Polytechnique (Institut Polytechnique de Paris)
- Ecole des Ponts Paris Tech (ENPC/Université Paris-Est)
- Ecole de Spécialisation des Energies Bas Carbone et des Technologies de la Santé INSTN à Saclay (partnership with the Université Paris-Saclay)
- Faculté des Sciences d'Orsay (UFR des Sciences d'Orsay/Université Paris-Saclay)

Industrial and research support (teaching, internships, learning expeditions)

The MNE is supported by:
- French industrial partners: ANDRA, CEA, EDF, Framatome, Orano
- French National Research Organizations (CEA, CNRS) and specialized institutes (such as the IRSN).

Courses very close to the facilities

Some courses and practical work on site. Learning Expeditions to well-known nuclear areas (EDF/NPPs, Orano/La Hague, Orano/Melox, Orano/Tricastin, Framatome/Chalon production site, CEA/Saclay and Marcoule (R&D, dismantling works).

Courses which implement the industrial and research tools and equipement

Nuclear calculation codes. Simulators of reactor functioning (normal, incidental). Enhanced Virtual Open-Core reactor. JANNuS multi-ion beam irradiation platform. Laboratories and specific softwares (radiation detection, dismantling works, XRD and SEM,…).

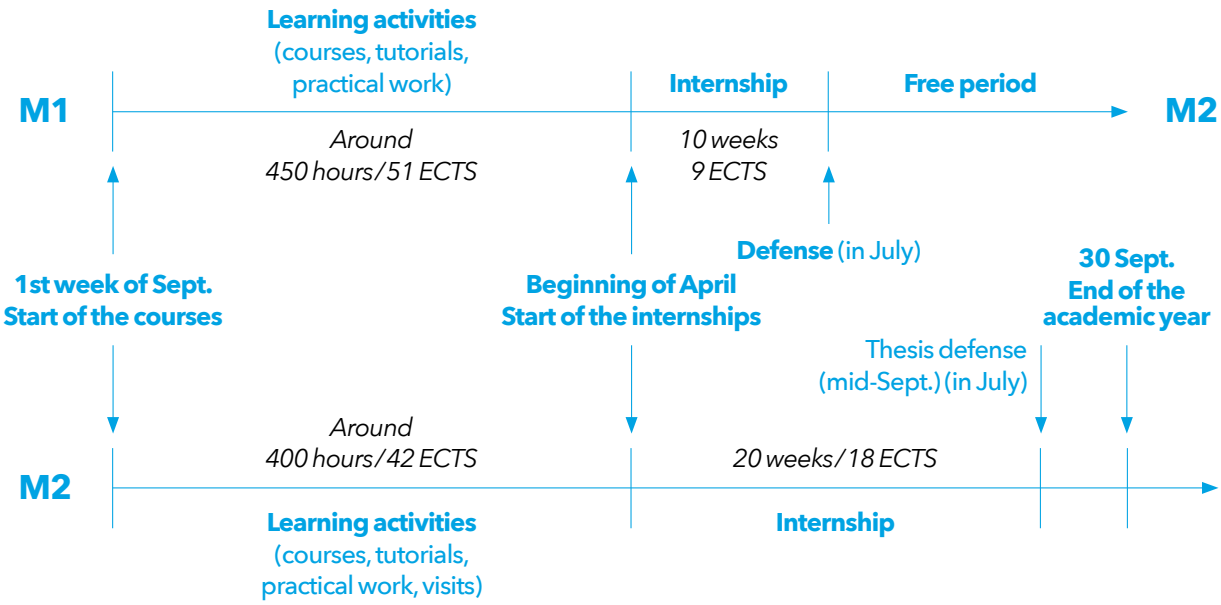
Courses which implement hands-on experience

Practical works. Learning according to a *Project Management* approach. Some learning outcomes evaluated through reports and defenses.

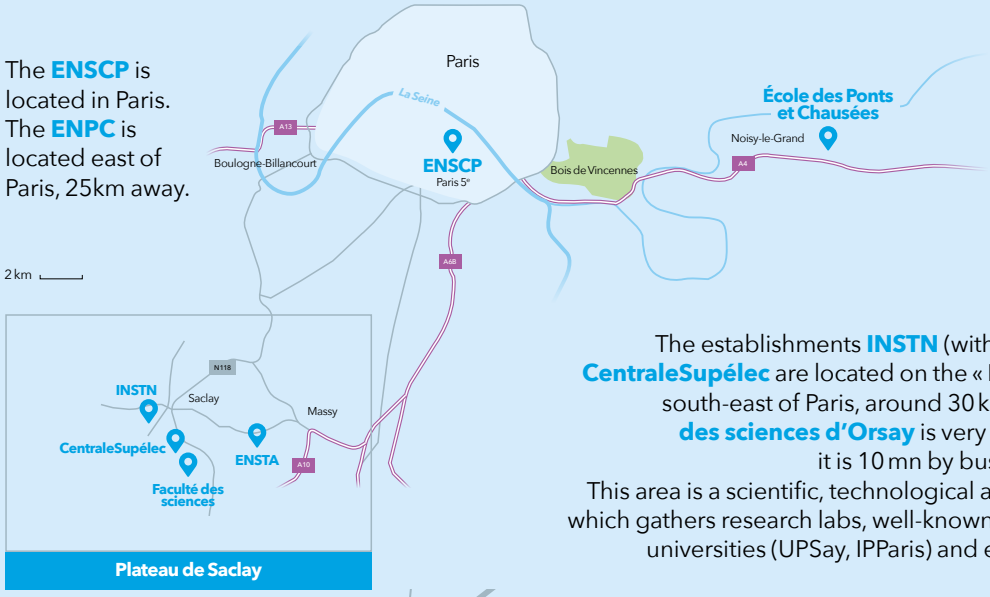
Immersion into professional life and current challenges of the nuclear energy field thanks to the internship

In a reasearch laboratory, in a design and engineering department, or on a production site : EDF, Framatome, Orano, CEA, IRSN, ANDRA, Service providers. UPSay, IPParis, PSL laboratories. Internship abroad possible.

MNE timeline



The **ENSCP** is located in Paris. The **ENPC** is located east of Paris, 25km away.



The establishments **INSTN** (within the CEA), **ENSTA**, **CentraleSupélec** are located on the « **Plateau de Saclay** », south-east of Paris, around 30 km away. The **Faculté des sciences d'Orsay** is very close to the plateau: it is 10 mn by bus between each one.
This area is a scientific, technological and educational pole which gathers research labs, well-known firms (EDF, CEA,…), universities (UPSay, IPParis) and engineering schools.

Apply to the MNE

MNE PREREQUISITES

M1 entrance

Justify a Bachelor degree associated with 180 ECTS credits or equivalent.

M2 entrance

Justify a Bachelor degree (180 ECTS) + 60 ECTS associated with a 1st master year or equivalent.

Students coming from other M1 than MNE may be eligible (providing that the scientific background is adequate).

APPLICATION ONLINE EXCLUSIVELY, FROM JANUARY TO THE END OF JUNE. TWO ADDRESSES POSSIBLE TO APPLY:

https://inception.universite-paris-saclay.fr/en/

https://www.ip-paris.fr/education/masters/mention-ingenierie-nucleaire

FURTHER INFORMATION, CONTACT:

MNE managers

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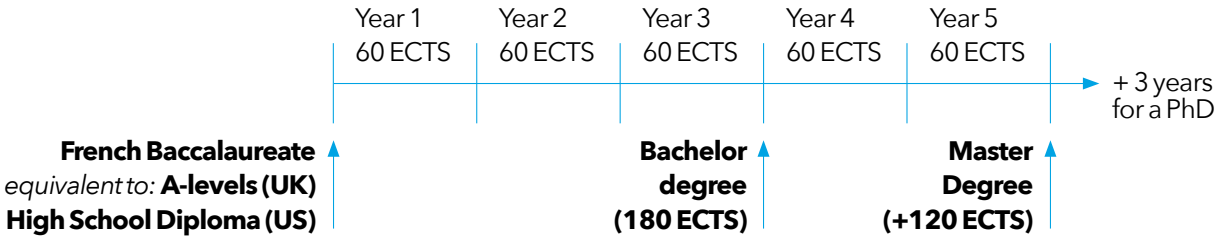
MNE alumnis

https://www.linkedin.com/company/mne-alumni/

TO FIND OUT MORE ABOUT THE FRENCH UNIVERSITY CURSUS



ECTS = European Credit and Accumulative System

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