

Master of Science

Nuclear Energy

Concentration in Nuclear Plant Design



INSTITUTION(S)

ENSTA ParisTech
Institut Polytechnique de Paris
INSTN
Paris-Saclay University

DURATION OF STUDY Two-years formation

LANGUAGE 

TRAINING LOCATION Gif-sur-Yvette
Orsay
Palaiseau
Paris



MODE OF STUDY • Continuing education
• Full time programme

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WEB www.universite-paris-saclay.fr
www-instn.cea.fr
www.ip-paris.fr
www.synapses.ensta-paris.fr

PREREQUISITES

Students from scientific university programmes, in France or abroad, who have completed successfully 180 ECTS (bachelor degree in physics, chemistry, mechanics, or nuclear engineering).

Student engineers from engineering schools who have completed successfully their first year.

SUMMARY

The Master in Nuclear Energy (MNE) is a two-year master degree programme taught exclusively in English. It aims to train high-level experts to meet current and future needs of the nuclear industry: performance optimization of the current reactor fleet, design of third-generation facilities, development of advanced processes and Generation IV reactors, operation of current reactors and facilities, dismantling of facilities, reprocessing of spent fuel, nuclear waste management, etc.

The first year consists of core courses with a specialization in either physics or chemistry.

The second year, different concentrations are available to students: Fuel Cycle (FC), Decommissioning & Waste Management (DWM), Nuclear Plant Design (NPD), Nuclear Reactor Physics & Engineering (NRPE), or Operations (OP).

Second year - M2 Nuclear Plant Design (NPD) specialization: the objective of this track is to give students a global and comprehensive view of the field of nuclear energy with, not only the acquisition of technical knowledge, but also economic, organizational and managerial knowledge. The students benefit from an in-depth study of the design and construction of nuclear facilities, particularly in terms of safety, general operations, and infrastructure, without neglecting the radiation protection aspect. Study tours (nuclear power plants, research facilities and laboratories, etc.) as well as simulated situations on a driving simulator complete the training. The specialization gives its students job prospects in project management, site or plant management, etc.

The NPD master degree is accredited by the I2EN and awarded the I2EN Label.

SKILLS

- To be able to mobilize one's knowledge and skills to build innovative nuclear facilities;
- Master nuclear safety and security standards and apply them to nuclear facilities;
- Know and understand the main calculation codes for nuclear reactor structures and operation;
- Master the basics necessary to understand the physical phenomena underlying the operation of nuclear reactors;
- Know how to operate nuclear structures and infrastructures in a general way.

CAREERS

- Engineers (general installation, system design, equipment design);
- Project manager (direct and/or control production in plant or on site);
- Test and commissioning engineers;
- Architect-engineers for large groups such as EDF, etc.;
- Architect-engineers for nuclear service providers or nuclear equipment suppliers.

TRAINING FACILITIES

Training (2 days) at the EDF Saclay Campus (full-scale simulator of a power plant control room with incidental conduct test).

