

Master of engineering in Reactor Physics and Nuclear Engineering



PRESENTATION

Since 1955 with the decision to build a nuclear research reactor in Grenoble, and thanks to close cooperation between the nuclear industries (nuclear energy contributes to 75% of French electricity) and academia, nuclear engineering has been taught continuously in Grenoble. Today, the Génie énergétique et nucléaire (GEN) program at Grenoble INP - Phelma, UGA is a well-established nuclear engineering program designed to train future engineers that will effectively integrate the nuclear industry or become researchers capable of developing the innovative solutions and technologies that are needed in the energy field.

All courses in the GEN are open to international exchange students. Moreover, it is possible for non-French speaking students to follow the equivalent of a semester of the GEN in English (Master level). International students may be also interested in the Bachelor of Nuclear Engineering or the Master degree of Material for Nuclear Energy (Manuen) since all courses in these two programs are taught in English.

INDUSTRIAL SECTORS

Many career opportunities exist in nuclear engineering or more generally in the energy field both nationally and internationally. Engineers trained in this program join every year the industry, filling positions as reactor operators, safety engineers, nuclear engineers, project managers or dismantling experts. Others work as nuclear engineers in the R&D or the engineering departments. Some will use their broad scientific background to contribute to the development of future generation of nuclear reactors or to perform more fundamental research such as nuclear instrumentation, nuclear physics or high energy physics during the preparation of a PhD.

RESEARCH

Professors teaching in the nuclear engineering program are also active researchers. Their research networks and the high density of academic laboratories of Grenoble's region will help the students to find research internship's opportunities. Every year students from GEN perform their research project in the laboratories existing in the Grenoble area such as the LEGI, LNCMI, LEPMI, LPSC, SIMAP, High Flux Reactor of ILL, Atomic Energy and Alternative Energies Commission (CEA) or in industrial and international partner laboratories (AREVA, EDF, IRSN, CERN, etc.).

ASSETS

The courses offered in the nuclear engineering program at Grenoble INP - Phelma, UGA focus on all aspects of nuclear reactor physics: neutronics, thermal hydraulics, material science, nuclear physics and instrumentation. In the last year of the training program, the students willing to work in the industry can follow a specialization in reactor safety and operation. Those interested in pursuing a carrier in research and development can chose different advanced courses in reactor physics and engineering, renewables energies, accelerators and nuclear physics.

Generally speaking, it is expected that the student will actively participate in these courses through team working, report writing and presentations. Students will participate also in laboratory experiments dealing with nuclear instrumentation and thermal hydraulics topics. In addition, courses such as applied neutronics, system thermal hydraulics, numerical analysis and reactor simulation require the student to perform numerical computer simulations. Each year GEN students have the opportunity to visit actual research and power reactors or EDF full scale simulators.



PRESS RANKINGS



Shanghai

Since 2020, Grenoble INP - UGA has contributed to the international ranking of the University of Grenoble Alpes

Shanghai Global 2022

Grenoble Alpes University ranked among the 150 best universities in the world and in the top 5 of French universities.



QS 2023 ranking by theme: Grenoble INP - UGA makes good progress in the field of engineering and technology

Grenoble INP - UGA has made good progress in the overall field of "engineering and technology", moving up 74 places to 93rd position worldwide and 5th position in France, making it the leading institution outside the Paris region. The institute has made eight appearances in this ranking.



REUTERS

Grenoble INP - UGA leader in 2 lists from Reuters Ranking 2019

Most innovative universities in Europe

- 2nd of the French Engineerings Schools
- 13th in France

Grenoble INP - Phelma, UGA is the school for scientific diversity. It offers its students courses in various fields with a promising future:

- **Microelectronics and nano-technologies** (electronics, nanosciences, materials, health),
- **Decarbonated energy** (nuclear energy, photovoltaic, electrochemical storage),
- **Information technology** (digital communication, image and signal processing, telecommunications, computing and networks, Internet of Things, artificial intelligence),
- **Innovative materials** (for aeronautics, automobiles, sport & leisures, health, microelectronics, energy),
- **Biotechnology and biomedical engineering** (medical imagery and therapy, implantable devices),
- **Sustainable development** (decarbonated energies, eco-processes, recycling, material durability, energy management, natural signal analysis).

Based in Grenoble in the heart of the French Rhône Alpes region, Phelma boasts a rich academic and industrial infrastructure. As the only teaching institute on the Minatec innovation campus, Phelma benefits from an exceptional Training / Research / Industry synergy.



1,400 students
380 + Engineering graduates a year
+ More than 25% of engineering go on to complete a thesis

110 permanent teacher-researchers from
11 laboratories associated with the school
Approximately 370 stakeholders from industry and research

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