Grenoble INP phelma

International Master **MaNuEn**

Materials science for **Nuclear Energy**

PRESENTATION

The international Master MaNuEn - Materials science for Nuclear Energy is a two years master of research in English. It covers specificities of materials used in a nuclear environment (nuclear fuels, components) with focus on their durability under irradiation. During the M1 you will be integrated in the international course of Phelma. The program content of M2 was developed with EDF and CEA engineers and is co-accreditated by INSTN. The second year takes place over two semesters: the first semester (September-January) is devoted to courses : a common core and two specialized modules ("Fuels" and "Components") with courses given at the CEA Cadarache or at EDF R&D center in Renardières in the Material Ageing Institute. Finally. Then a minimum of 5 month training period start in february.

INDUSTRIAL SECTORS

The strong partnership with engineers and researchers of EDF R&D and CEA working on materials for nuclear industry will allow you to refine your professional project. The international Master MaNuEn Materials science for Nuclear Energy will allow you to become a nuclear engineer or a researcher in R&D department. As an engineer you will have knowledge ranging from design and construction, to operation and maintenance to power station decommissioning and waste management to the fuel cycle. As a researcher you will be able, often after a PhD, to enter in the large R&D center involved in nuclear engineering (EDF, AREVA, CEA...) but also in the academic laboratories in all around the world.

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RESEARCH

In Grenoble there are several laboratories involved in the nuclear research. The group nuclear physics at LPSC laboratory (www.lpsc.in2p3.fr) is for example working on the physics of reactors (molten salt reactors, nuclear data, thorium, and accelerator driven systems). The SIMAP laboratory (www.simap.grenoble-inp.fr) is involved in multiscale modelling of irradiation defects in materials and also in materials behavior for fission reactors and ITER. The LEPMI laboratory (www.lepmi.grenoble-inp.fr) is also involved in nuclear engineering (fluid dynamics, corrosion...).

ASSETS

The master has been initiated by Yves Bréchet who is member of the French Academic of Science and who is now "Haut Commissaire" at the French CEA, one of the most important position of the CEA center.

THE STRONG POINTS OF THE MASTER ARE:

- A strong partnership with EDF and CEA: this master is supported by this two key actors in nuclera industry
- 50 % of the course are given by engineers and researchers from EDF and CEA-INSTN
- Two modules courses in M2 in industry: 3 weeks are planed at the CEA Cadarache and one at the R&D center of EDF in Renardières near Paris
- All courses are provided in english in an international environment
- General courses on energy

CONTACT

respmanuen@phelma.grenoble-inp.fr

Grenoble INP - Phelma
Minatec - 3 Parvis Louis Néel
CS 50257 - 38016 Grenoble Cedex 01 - France

http://phelma.grenoble-inp.fr

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Grenoble INP - Phelma is the school for scientific diversity. It offers its students courses in various fields with a promising future: **micro and nano-technologies** (micro / nano-electronics, nano-sciences, materials, health, building, etc.), **energy** (nuclear energy, renewable energies, accumulators, etc.), **innovative materials** (for aeronautics, automobiles, sport & leisures, health, microelectronics, energy, etc.), **information technology** (digital technologies, image and signal processing, telecommunications, computer science & networks, embedded softwares, etc.), **biomedical engineering** (medical imagery and therapy, implantable devices, etc.) and the **environment** (eco-processes, energy management, natural signal analysis, etc.).

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.

Key figures: more than 1,200 students, plus 300 engineering graduates a year, 160 permanent research lecturers from the school's thirteen partner laboratories, 270 speakers from industry and the world of research, plus 25% of engineering students studying for doctorates.

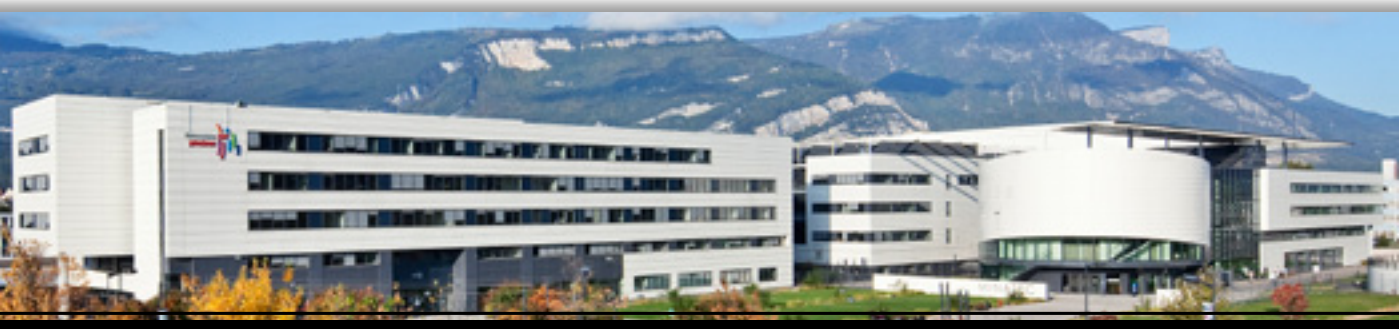
PRESS RANKINGS

QS WORLD UNIVERSITY RANKINGS Grenoble INP, leader in 2 lists from QS World University Rankings Engineering & Technology 2014

L'USINE NOUVELLE Grenoble INP ranked 2nd by L'Usine Nouvelle among the 100 best french engineering schools in 2014

Grenoble INP ranked 1st by « Industrie et Technologies » in 2013

Forbes Grenoble, ranked 5th World's most inventive city by Forbes in 2013



PHYSICS, APPLIED PHYSICS, ELECTRONICS AND MATERIALS SCIENCE