

Overview of Master's degrees in the Nuclear field





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Master's degree in Nuclear Science and Technology



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Summary

Its main objective is the training for the research and the professional work in the nuclear fission and fusion fields, as well as for the development of their energy-related and industrial applications. Accordingly, this Master's degree includes scientific and technologic aspects related to the progresses made in nuclear fission reactors and nuclear fusion systems, along with the methodologies for their numerical simulation and the development of new materials.



Main information

University/Coordinating Institution Department	Technical University of Madrid (UPM) Energy Engineering Department
Institutions involved in teaching	Technical University of Madrid (UPM)
Location/Faculties	School of Industrial Engineering - UPM (Madrid)
Credits/Teaching hours	60 ECTS
Duration	1 academic year
Type of teaching	In-person
Tuition fees	45.02€/ECTS (first enrolment, for EU students)

Comments

The Master's degree in Nuclear Science and Technology has four modules: The compulsory, common module comprises a total of 30 ECTS+12 ECTS from the Master's thesis and the optional module 18 ECTS. Being an official master's degree allows the student entering directly the Doctorate research period, and thus carrying out the doctoral thesis, particularly within the Doctoral Program in Sustainable Energy, Nuclear and Renewable (UPM) in its Nuclear Science and Technology line of research.



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European Master's in Nuclear Energy (EMINE)



Summary

This is a program offered within the KIC InnoEnergy (European Institute of Innovation and Technology) based on the excellence of its academic members, international mobility and a unique approach that combines scientific and technical training with training in management and leadership, along with a strong industrial participation. †



Main information

University/Coordinating Institution Department	Université Grenoble-Alpes (Grenoble INP: Institute of Technology), KTH Royal Institute of Technology, Universitat Politècnica de Catalunya (Barcelona Tech), Institut Polytechnique de Paris (IPP) - ENSTA
Institutions involved in teaching	Université Science et Lettres (Chimie Paris), Université Paris Saclay (INSTN & Centrale Supelec Ecole Nationale des Ponts et Chaussées, Grenoble School of
Location/Faculties	Barcelona or Stockholm + Paris or Grenoble
Credits/Teaching hours	120 ECTS
Duration	2 academic years
Type of teaching	In-person
Tuition fees	36,000 (see scholarships and partial or total discounts for students with good academic records)

Comments

There are partial and total discounts (fee-waiver) for students with good academic records †
The first year in EMINE is precisely the same as the local master's degree in Nuclear Engineering (MNE), for those studying their first year at the UPC. †



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Quentin Mihtsch

Master on Nuclear Engineering (MNE)



Summary

This master's degree is oriented towards training professionals able to occupy posts of responsibility at companies in the nuclear sector. It is sponsored by ENDESA and has the participation of CSN, ENUSA, CIEMAT, TECNATOM, ANAV, ENRESA, IDOM, Fusion for Energy, Nuclenor, ENSA and ORANO, among others.



UNIVERSITAT POLITÈCNICA
DE CATALUNYA
BARCELONATECH

Main information

University/Coordinating Institution Department	Universitat Politècnica de Catalunya (UPC) Physics Department
Institutions involved in teaching	ANAV, Ciemat, CSN, Endesa, Enresa, Ensa, Enusa, F4E, Idom, KTH, Nuclenor, Orano, Tecnatom, UPC
Location/Faculties	Barcelona School of Industrial Engineering
Credits/Teaching hours	90 ECTS
Duration	1.5 academic years
Type of teaching	In-person
Tuition fees	6,000€ (9000€ for non-EU students)

Comments

The MNE provides a solid training both in technical and cross-cutting skills, that are necessary in order to face the challenges of the nuclear industry, and it is embedded in the EMINE (European Master in Nuclear Energy), from KIC InnoEnergy.



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Lluís Batet

Master's degree in Radiation Protection at Radioactive and Nuclear Facilities



Summary

The courses are grouped into 4 modules: General Module, Specific Module in Radioactive Facilities, Specific Module in Nuclear Facilities and Fuel Cycle and Advanced Module.



UNIVERSITAT
POLITÈCNICA
DE VALÈNCIA

Main information

University/Coordinating Institution Department	Polytechnic University of Valencia Chemical and Nuclear Engineering Department
Institutions involved in teaching	Polytechnic University of Valencia Chemical and Nuclear Engineering Department
Location/Faculties	Chemical and Nuclear Engineering Department
Credits/Teaching hours	60 ECTS
Durations	1 academic year
Type of teaching	180 in-person and 420 online teaching h
Tuition fees	2,750€ (in 4 instalments for the general public) and 2,200€ (in 4 instalments, for particular cases)

Comments

At the end of each course and at the beginning of the Máster's degree there is a "Policonecta" session (3h). At the end of each module, its face-to-face part is carried out (Practical Workshops /Technical Visits, In-person Seminar and Exam).

Finally, the student will have to do a master's degree final dissertation, with a required workload equivalent to 6 ECTS.



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Gumersindo Verdú

Máster Erasmus Mundus Safe and Reliable Nuclear Applications (SARENA)

Summary

Its goal is that of building scientific, technical and management skills that allow engineers to work in all the fields related to nuclear energy and its applications. It has a strong international spirit, promoting the enrolment of students from around the world and being taught entirely in English. It comprises 3 semestres in courses (30 ECTS each) and another semester in an industrial or research project for the master's thesis (TFM), with 30 ECTS.



Main information

University/Coordinating Institution Department	IMT-Atlantique (Ecole Nationale Supérieure Mines Telecom, Bretagne Pays de la Loire) and Subatech-Subatomic Physics and Technologies
Institutions involved in teaching	IMT-Atlantique(France) Technical University of Madrid (Spain), Lappeenranta University of Technology (Finland) and Univerzav Ljubljani (Slovenia)
Location/Faculties	School of Industrial Engineering – UPM (Spain)
Credits/Teaching hours	120 ECTS/2 years
Duration	2 academic years
Type of teaching	In-person
Tuition fees	9000€ (2 years and medical insurance) 18,000€ (non-EU students)

Comments

This master's degree has two different itineraries: Radioactive Waste Management and Decommissioning (RWMD), taught at IMT-Atlantique and UPM and Nuclear Reactors Operation and Safety (NROS), taught at IMT-Atlantique, LUT and UL. SARENA offers scholarships (20,000€/year) financed by the Erasmus Mundus program, that cover tuition fees as well as transportation and accomodation expenses.



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Erasmus Mundus European Master of Science in Nuclear Fusion & Engineering Physics (Fusion-EP)



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Summary

Its goal is to provide an education oriented towards engineering physics, related to nuclear fusion and in close connection with the research that carried out at the institutes involved, which have extensive experience in the field of nuclear fusion. The coordinated teaching proposed by these institutions offers a broad set of skills in the fields of nuclear fusion science and the physics of the related engineering.



Main information

University/Coordinating Institution Department	Aix-Marseille (France)
Institutions involved in teaching	In Spain: Carlos III University (Madrid) y Complutense University (Madrid)
Location/Faculties	Polytechnic School, Carlos III University (Madrid) and Faculty of Physical Science, Complutense University (Madrid)
Credits/Teaching hours	7.5 h/ECTS
Duration	120 ECTS/2 academic years
Type of teaching	In-person
Tuition fees	45.02€/ECTS (EU students), 84.07€/ECTS (non-EU students)

Comments



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