

Overview of Master's degrees in Nuclear Field





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



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Summary

This Master's degree is oriented towards research and professional training in engineering physics related to nuclear fusion.

The coordinated course offered by the participating institutions offers a wide range of competences in the field, closely linked to the research work carried out by these institutions, all of which have extensive experience in the field of fusion.



Main information

University/Coordinating Institution	Aix-Marseille (Francia)
Department	
Institutions involved in teaching	Spain: Carlos III University (Madrid) and Complutense University (Madrid) Rest of Europa: Aix-Marsella University; INSTN France; Ghent University, Belgium; Université de Lorraine (Nancy) France; Universität Stuttgart, Germany and CTU Prague, Czech Republic
Location/Faculties	High Polytechnic School of Carlos III University (Madrid) and Faculty of Physical Sciences of the Complutense University (Madrid)
Credits/Teaching hours	120 ECTS (M1 and M2)
Duration	2 courses, in 2 different locations
Type of teaching	In-person
Tuition fees	4,500€/course (EU students) 9,000€/course (non-EU students)

Comments

Annual financing of fees and expenses for 40 students (20 M1 and 20 M2).



[Access the master's web](#)



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Erasmus Mundus Joint Master Degree in Nuclear Physics



Summary

Master's degree oriented towards training experts in Nuclear Physics with excellent preparation in Physics and Nuclear Technologies with a double objective: to provide specialists who can join companies in any of the aforementioned fields; and to prepare students capable of carrying out research and Doctoral Theses i



Main information

University/Coordinating Institution Department	Sevilla University, Department of Atomic, Molecular and Nuclear Physics
Institutions involved in teaching	Spain: Autonomous University (Madrid), Complutense University(Madrid), Barcelona University and Sevilla University France: Caen University Italy: Catania University, Padova University
Location/Faculties	All the above-mentioned universities
Credits/Teaching hours	7,5h/ECTS
Duration	120 ECTS/2 years
Type of teaching	In-person
Tuition fees	4,500€/year (UE students) 9,000€/year (non-UE students)

Comments

Consult the website for all information on scholarships.



Erasmus Mundus Joint Master Degree in Safe and Reliable Nuclear Applications (SARENA)



Summary

It aims to develop scientific, technical and management skills that enable engineers to work in all domains related to nuclear energy and its applications. With a strong international spirit, it encourages students from all over the world to join the programme, which is taught entirely in English. With two tracks, it covers a wide range of nuclear applications, including the design and operation of nuclear power plants, and delves into the safe management of radioactive waste and the decommissioning and dismantling of facilities.



Main information

University/Coordinating Institution Department	IIMT-Atlantique (Ecole Nationale Supérieure Mines Telecom, Bretagne Pays de la Loire), Subatech -Subatomic Physics and Technologies
Institutions involved in teaching	IMT-Atlantique, France; Madrid Polytechnic University (UPM), España; Lappeenranta University of Technology (LUT), Finlandia; Univerza v Ljubljani(UL), Eslovenia
Location/Faculties	High Technic School of Industrial Engineering of the UPM
Credits/Teaching hours	120 ECTS
Duration	2 academic courses
Type of teaching	In-person
Tuition fees	9,000€ (2 years and medical insurance) 18,000€ (non-UE students)

Comments

It consists of an academic period of 3 semesters with 30 ECTS each and a semester of industrial or research project for the Master's thesis with 30 ECTS. Two different itineraries are offered: Radioactive waste management and decommissioning (RWMD) and Nuclear reactor operation and safety (NROS).

SARENA offers scholarships (€20,000/year) funded by the Erasmus Mundus program to cover tuition, travel and living expenses.



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European Master's in Nuclear Energy (EMINE)



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Summary

It is a program offered within the framework of KIC InnoEnergy (European Institute of Innovation and Technology) based on the excellence of the academic partners, international mobility (double degree) and a approach that combines scientific and technological training with management and leadership training, together with strong industrial participation.



UNIVERSITAT POLITÈCNICA
DE CATALUNYA
BARCELONATECH

Main information

University/Coordinating Institution Department	Universitat Politècnica de Catalunya, Department of Physics, Division of Nuclear Engineering
Institutions involved in teaching	Université Grenoble-Alpes, KTH Royal Institute of Technology, Universitat Politècnica de Catalunya, Institut Polytechnique of Paris, Université Science et Lettres, Université Paris Saclay, Ecole Nationale des Ponts et Chaussées, ESADE Business School
Location/Faculties	Barcelona or Estocolmo + París or Grenoble
Credits/Teaching hours	120 ECTS
Duration	2 year
Type of teaching	In-person
Tuition fees	36,000€

Comments

There is the possibility of partial and total discounts (fee-waiver) for students with good records. The first year of EMINE coincides completely with that of the local master's degree in Nuclear Engineering (MNE) for students taking their first year at UPC.



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Interuniversity Master's Degree in Nuclear Physics



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Summary

The Master's Degree aims to provide students with a solid training that covers both fundamental and applied aspects of the discipline, as well as to promote postgraduate studies in Nuclear Physics at state level, favouring contact between students and the best groups of professors and researchers in the area.



Main information

University/Coordinating Institution Department	Sevilla University/Department of Atomic, Molecular and Nuclear Physics
Institutions involved in teaching	Sevilla and Barcelona Universities, Autonomous and Complutense of Madrid, Granada and Salamanca Universities. CIEMAT and CSIC through the Institute for the Structure of Matter and the Institute for Corpuscular Physics. CNA (Sevilla) and CMAM (Madrid).
Location/Faculties	All the above-mentioned universities
Credits/Teaching hours	60 ECTS
Duration	1 academic course
Type of teaching	In-person
Tuition fees	Depends on the Autonomous Community where the registration takes place

Comments

The Master is official and is aimed at training future researchers, professionals in medical physics, radiology, environmental radioactivity, nuclear analysis techniques, technological developments, radioactive isotope dating, nuclear energy and all applications of nuclear physics.



Master on Nuclear Engineering (MNE)



Summary

The master's degree, taught in English, is aimed at training professionals capable of occupying positions of responsibility in companies in the nuclear sector and R&D&I centres. It is sponsored by ENDESA with 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, CIEMAR, CSN, ENDESA, ENRESA, ENSA, ENUSA, F4E, IDOM, KTH, Nuclenor, ORANO, Tecnatom, UPC
Location/Faculties	Barcelona High Technical School of Industrial Engineering
Credits/Teaching hours	90 ECTS
Duration	1 year and a half
Type of teaching	In-person
Tuition fees	2,500€ approx. (6,250€ non-UE students)

Comments

The MNE provides a solid technical and transversal skills training, necessary to face the challenges of the nuclear industry, and is embedded in EMINE (European Master in Nuclear Energy), of the KIC InnoEnergy.



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Master's Degree in Radiation Protection in Radioactive and Nuclear Installations



Summary

Training action aimed at higher engineers, graduates in Physics or Chemistry and university graduates (Engineers, Technicians, DUES, ATS, etc.) and Official University Graduates. The subjects are grouped into 4 modules: General Module, Specific Module on Radioactive Installations, Specific Module on Nuclear and fuel Cycle Installations, and Advanced Module.



UNIVERSITAT
POLITÈCNICA
DE VALÈNCIA

Main information

University/Coordinating Institution Department	Universitat Politècnica de València Department of Chemical and Nuclear Engineering
Institutions involved in teaching	Universitat Politècnica de València, Department of Chemical and Nuclear Engineering
Location/Faculties	Department of Chemical and Nuclear Engineering
Credits/Teaching hours	60 ECTS
Duration	1 academic course
Type of teaching	180h in-person y 420h online
Tuition fees	2,750€ (in 4 instalments for the general public) and 2,200€ (in 4 instalments for individual cases)

Comments

At the end of each subject there is a "Polyconecta" session (3h) for revision. At the end of each module, the face-to-face part of the module is carried out (Practical Workshops/Technical Visits, Seminar and Face-to-Face Seminar, and on-site Examination).

Finally, the student must complete a master's thesis with a workload equivalent to 6 ECTS. Successful completion of the four modules of which the course is comprised leads to the award of the Master's Degree in Radiation Protection in Radioactive and Nuclear Installations.



Master's Degree in Nuclear Science and Technology



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Summary

Established in 2006, it is a benchmark master's degree in the sector. Its main objective is to provide training for the development of research and professional work in the field of nuclear fission and fusion, as well as its energy and industrial applications. For this reason, the Master's degree includes fundamental scientific and technological aspects relating to advances in nuclear fission reactors - with emphasis on safety and radioactive waste - and in nuclear fusion systems - in their magnetic and inertial confinement versions - together with methodologies for their numerical simulation and the development of new materials.


POLITÉCNICA

Main information

University/Coordinating Institution	Madrid Polytechnic University (UPM)
Department	Department of Energy Engineering
Institutions involved in teaching	Madrid Polytechnic University (UPM)
Location/Faculties	High Technic School of Industrial Engineering of the UPM (Madrid)
Credits/Teaching hours	60 ECTS
Duration	2 semesters (full academic year)
Type of teaching	In-person
Tuition fees	45.02/ECTS in first enrolment (public prices, EU students)

Comments

It has four main blocks in its structure. The common compulsory part comprises a total of 30 ECTS + 12 ECTS of the Master's Thesis and the optional subjects 18 ECTS.

There are scholarships for the TFM and agreements for stays in European research centers. The fact that it is an official master's degree means that it is possible to go directly to the Ph.D. research period, and therefore to the Doctoral Thesis, in particular, the Doctoral Thesis, in particular within the Doctoral Programme in Sustainable, Nuclear and Renewable Energy of the UPM, in the Renewable Energy of the UPM, in its line of research in Nuclear Science and Technology.


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Eduardo Gallego
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 Manuel Cotelo
 (Secretary)

Master's Degree in Nuclear Safety and Radiation Protection



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Summary

The main objective is for students to acquire skills and abilities in the field of Nuclear Safety (NS) and Radiation Protection (RP). The master's degree programme comprises the following subjects: Fundamentals of Nuclear Energy (10.5 ECTS), Fundamentals and Methods in Nuclear Safety (9 ECTS), Specific Training in Nuclear Safety and Radiation Protection (24 ECTS), Complements to Nuclear Safety and Radiation Protection in optional subjects (4.5 ECTS) and Master's Thesis (12 ECTS).



UNIVERSITAT
POLITÈCNICA
DE VALÈNCIA

Main information

University/Coordinating Institution Department	Universitat Politècnica de València Department of Chemical and Nuclear Engineering
Institutions involved in teaching	Universitat Politècnica de València. High Technical School of Industrial Engineering. Department of Chemical and Nuclear Engineering
Location/Faculties	Universitat Politècnica de València
Credits/Teaching hours	60 ECTS/600 hours
Duration	1 year
Type of teaching	In-person
Tuition fees	35.34€/credit

Comments

The Master's Degree is aimed at university graduates in Engineering (Industrial Technologies, Materials, Energy, Chemistry, Mechanics, Electricity and Electronics); university graduates in Physical Sciences and Chemical Sciences; graduates in Engineering (Industrial, Chemical, Chemistry, Mechanics, Materials, Electricity and Electronics), according to the previous regulations of University Academic Organisation; graduates in Physical Sciences and Chemical Sciences, according to the previous regulations of University Academic Organisation.



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