2020 - 2021

Overview of Master's degrees in Energy training with nuclear specialization

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Foro Nuclear
Foro de la Industria Nuclear Española

Index:

2020/2021

Master's Degree in Energy Engineering

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Summary

Its academic goal is to train the future professionals that will build their careers in the energy sector, covering all the topics from energy sources (such as fossil fuels, solar, wind, hydraulic, and nuclear energies) to its applications. It offers five itineraries conceived to complete the specialization in different aspects of the sector: Energy Markets, Energy Resources, Energy Technologies, Renewable Energies and Nuclear Energy.

Main information

University/Coordinating Institution Department	Technical University of Madrid School of Industrial Engineering
Institutions involved in teaching	Technical University of Madrid
Location/Faculties	School of Industrial Engineering, School of Mining and Energy Engineering and School of Industrial Design and Engineering
Credits/Teaching hours	90 ECTS
Duration	3 semesters (plus bridging courses if necessary)
Type of teaching	In-person
Tuition fees	45.02€/ECTS (first enrolment)

Comments

This Master's degree allows to access the Doctorate program. It is a competitive degree with respect to the admission and demanding regarding the work required. It consists in 90 ECTS, structured in three semesters: the first one being dedicated to common and general training in the energy field; the second, to specialty training and the third to cross-cutting activities.

Access the master's site

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Alberto Abánades
Nuria García

2020/2021

Master's degree in Energy Engineering for the Sustainable Development

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Summary

This Master's degree is structured in a common compulsory module, (33 ECTS) so that the student can acquire the skills defined in the areas of analysis, design and research in the Energy Technology field and a optional module (27 ECTS) that allows the student to extend the knowledge and skills acquired in the compulsory module. A part of the ECTS (up to 9) in this module can also be obtained through internships in a Company, with academic recognition.

UNIVERSITAT POLITÈCNICA DE VALÈNCIA

Main information

University/Coordinating Institution Department	Polytechnic University of Valencia. Energy Engineering Institute
Institutions involved in teaching	Polytechnic University of Valencia. Energy Engineering Institute
Location/Faculties	Chemical and Nuclear Engineering Department
Credits/Teaching hours	90 ECTS
Duration	1.5 years
Type of teaching	In-person
Tuition fees	39.27€/ECTS

Comments

The admission to this Master's degree is subject to having a solid formation in electrical and mechanic engineering including a general knowldedge of the broad set of existing energy technologies, such as that adquired through the current degrees in Industrial Engineering and Energy Engineering. It is possible to obtain a double degree in foreign prestigious universities, by taking 30 additional ECTS adicionales at the other University.

Access the master's site

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Marian Daries

2020/2021

Master's degree in Sustainable Energy Engineering

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Summary

This master's degree is focused on the energy supply and use by (and to) the industrial and social stakeholders, with the purpose of allowing for the maintenance and improvement of the current living standards under the new geopolitical conditions.

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Universidad del País Vasco

Euskal Herriko Unibertsitatea

Main information

University/Coordinating Institution Department	University of the Basque Country. Nuclear Engineering and Fluidmechanics Department
Institutions involved in teaching	University of the Basque Country. Nuclear Engineering and Fluidmechanics Department
Location/Faculties	School of Engineering of Bilbao
Credits/Teaching hours	60 ECTS/600 teaching hours
Duration	1 academic year
Type of teaching	In-person
Tuition fees	32.45€/ECTS

Comments

Approximately 150 people apply for this Master's degree every course. Around 20 people are admitted.
Practically all the students have found a job, in many cases before ending the Master's degree.
Furthermore, some of the students have fractioned the number of credits taken, so as to carry out their studies in two years

Access the master's site

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Isabel Colino
Natalia Alegría

2020/2021

Master's degree in Industrial Engineering

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Summary

Official Master's degree that qualifies for the practice of the profession of Industrial Engineer in Spain, according to the Order CIN/311/2009. It has a specialty in Nuclear Engineering, where, depending on the degree of origin, up to 20 ECTS in nuclear-related courses can be taken, with the additional possibility of doing the Master's thesis (15 ECTS) on a nuclear engineering subject.

Main information

University/Coordinating Institution Department	Spanish National University of Distance Education (UNED) School of Industrial Engineering
Institution(s) involved in teaching	Spanish National University of Distance Education (UNED) School of Industrial Engineering
Location/Faculties	Distance learning, except for in-person practical training, which takes place in Madrid. In-person exams in a location chosen by the student (See Associated Centres in Spain or abroad)
Credits/Teaching hours	120 ECTS
Duration	2 academic courses
Type of teaching	Distance learning, except for in-person practical training, which takes place in Madrid. In-person exams. Virtual platform and Student service (remote or in-person in Madrid)
Tuition fees	33.75 €/ECTS (first enrolment, year 2020-2021) or see public fees

Comments

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Mercedes Alonso

2020/2021

Master's degree in Industrial Engineering

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Summary

This Master's degree has a specialty in Energy Techniques con una intensificación en temas nucleares. The specialty includes 6 compulsory ECTS in specialty courses (Radiation Protection and Nuclear Safety /RadiationTechnology) and up to 15 optional ECTS in introduction to doctorate program, with subjects from the Master's degree in Nuclear Science and Technology. Furthermore, the students can take the 12 ECTS "Ingenia-Nuclear" course "Design and Simulation of a Pressurized Water Reactor".

Main information

University/Coordinating Institution Department	Technical University of Madrid School of Industrial Engineering
Institution(s) involved in teaching	Technical University of Madrid
Location / Faculties	School of Industrial Engineering (Madrid)
Credits/Teaching hours	120 ECTS
Duration	2 academic courses
Type of teaching	In-person
Tuition fees	29.78€/ECTS (first enrolment, public fees 2020-2021)

Comments

The Master's degree in Industrial Engineering of the Technical University of Madrid is accredited by the Accreditation Board for Engineering and Technology (ABET) and has the EUR-ACE seal of quality.

The students can opt for the "Double Master's degree in Industrial Engineering and Nuclear Science and Technology" with a total of 144 ECTS (only 10 places). This double degree aims at combining the comprehensive training of the Industrial Engineering with the specialization in the field of the energy-related and industrial applications of fission and fusion nuclear power.

Access the master's site

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Óscar Cabellos

2020/2021

Master's degree in Industrial Engineering. Specialty in Power Generation

Supplementary training in Nuclear Engineering

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Summary

This master's degree includes the core course "Extension of Energy and Thermal machines", where issues related to two-phase flow are addressed.
Moreover, the Power Generation specialty contains the course "Nuclear energy and radiations", which adresses, among others, the following topics: Generation II, III, III+ Nuclear Power Reactors, Advanced Nuclear Power Reactors, Nuclear Safety/ Technological Safeguards, Neutronic diffusion theory.

UNIVERSITAT POLITÈCNICA DE VALÈNCIA

Main information

University/Coordinating Institution Department	Polytechnic University of Valencia. School of Industrial Engineering. Chemical and Nuclear Engineering Department.
Institution(s) involved in teaching	Polytechnic University of Valencia
Location / Faculties	Polytechnic University of Valencia, Vera Campus, Valencia (Spain)
Credits/Teaching hours	120 ECTS
Duration	2 academic courses
Type of teaching	In-person
Tuition fees	See Law 20/2017, from 28 December, by the Generalitat Valenciana (regional authority)

Comments

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2020/2021

Master's degree in Research on Industrial Technologies

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Summary

This is a master's degree that aims at introducing the student into research activities. It has an itinerary in Energy Engineering with 9 ECTS in compulsory nuclear-related courses, in addition to a 15 ECTS Master's thesis. This thesis may be part of some of the international research programmes in which the reseach group TECF3IR takes part, such as ITER, IFMIF-DONES and DEMO. Furthermore, it could serve as the precursor to the Doctoral thesis.

Main information

University/Coordinating Institution Department	Spanish National University of Distance Education (UNED) School of Industrial Engineering
Institutions involved in teaching	Spanish National University of Distance Learning (UNED) School of Industrial Engineering
Location / Faculties	Distance learning. On-site exams at the location chosen by the student (See Associated Centres in Spain or abroad)
Credits/Teaching hours	60 ECTS
Duration	1 academic year
Type of teaching	Distance learning with on-site exams Virtual platform and Student Service (both remote and in-person, in Madrid)
Tuition fees	35.02 €/ECTS (first enrolment, 2020-2021 course) or see public fees

Comments

The three research lines offered in the field of industrial engineering are:

- L.19. Design of accelerator-driven radioactive waste transmutation systems.
- L.20. Radiation protection and safety in the design of high-intensity accelerators directed at simulating radiation damage in nuclear fusion reactor materials.
- L.21. Safety and environmental impact in the design of experimental facilities and conceptual fusion power plants.

Access the master's site

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Mercedes Alonso

2020/2021

Máster's degree in Industrial Safety and Environment

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Summary

This Master's degree is both profesional and research-oriented, with the following two specialties:
-Industrial Environment, related to the prevention, control and elimination techniques of industrial pollution.
-Nuclear Safety, related with nuclear safety in nuclear power plants, radiation protection at industrial and medical facilities, and with the environmental problems concerning nuclear energy.

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 (Spain); Politecnico de Milano (Italy); University of Applied Sciences, Institute ofPhysical Chemistry and Radiochemistry (Germany); HE2B (Belgium)
Location / Faculties	Chemical and Nuclear Engineering Department
Credits/Teaching hours	60 ECTS/2 semesters
Duration	1 year
Type of teaching	In-person
Tuition fees	2.356.20€

Comments

The Nuclear Safety module of the master's degree includes the following specific training courses: Advanced signal analysis, Radiation dosimetry, Methods and applications in radiochemistry, Safety incidents in nuclear reactors, Natural radioactivity y Termalhydraulics. Furthermore, within the supplementary training module, the following courses can be taken: Nuclear dynamics, Radioactive facilities, Introduction to two-phase flow and Nuclear energy environmental problems.

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