2023 - 2024

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

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2023/2024

Master's Degree in Energy Engineering for Sustainable Development

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Summary

The master's degree is structured into a compulsory common block (33 ECTS) so that students can acquire the competences defined in the fields of analysis, design and research in the field of Energy Technology, and an optional block (27 ECTS) that allows students to extend the knowledge and skills acquired in the compulsory module. Part of the ECTS of this block can also be obtained through work placements in companies with academic recognition, up to a maximum of 9.

UNIVERSITAT POLITÈCNICA DE VALÈNCIA

Main information

University/Coordinating Institution Department	**Universidad Politécnica de Valencia. Institute of Energy Engineering**
Institutions involved in teaching	**Universidad Politécnica de Valencia. Institute of Energy Engineering**
Location/Faculties	**Department of Chemical and Nuclear Engineering**
Credits/Teaching hours	**90 ECTS**
Duration	**1 year and a half**
Type of teaching	**In-person**
Tuition fees	**35,34€/ECTS (2022/2023)**

Comments

Admission to the Master's degree is conditional on having a solid background in electrical and mechanical engineering, including a general knowledge of the wide range of existing energy technologies, such as that acquired through the current degrees in Industrial Technologies Engineering and Energy Engineering.
There is the possibility of obtaining a double degree in prestigious foreign universities, taking an additional 30 ECTS at the other university.

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2023/2024

Master's Degree in Sustainable Energy Engineering

3

Summary

Pay special attention to the supply and use of energy by the industrial and social fabric in order to enable the maintenance and expansion of current living standards in the new geopolitical conditions.

eman ta zabal zazu

Universidad del País Vasco

Euskal Herriko Unibertsitatea

Main Information

University/Coordinating Institution Department	**País Vasco University. School of Engineering of Bilbao, Department of Energy Engineering.**
Institutions involved in teaching	**País Vasco University. School of Engineering of Bilbao, Department of Energy Engineering.**
Location/Faculties	**School of Engineering of Bilbao**
Credits/Teaching hours	**60 ECTS/600 school hours**
Duration	**1 academic course**
Type of teaching	**In-person**
Tuition fees	**2,000€ approx.**

Comments

There are still about 50 applicants and slightly more than 25 students admitted, and practically all the students have found employment, in many cases before the end of the Master. In addition, some students have split the number of enrolment credits in order to take the Master's degree over two years.

Access the Master's website

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Isabel Colino
Natalia Alegría

2023/2024

Master's Degree in Industrial Engineering (Specialization in Nuclear and Radiological Engineering)

4

Summary

The nuclear field does not only involve generation and, therefore, in this 30 ECTS speciality, the applications of ionising radiation and the radiological evaluation of the different activities carried out in this field are also studied.

eman ta zabal zazu

Universidad del País Vasco

Euskal Herriko Unibertsitatea

Main information

University/Coordinating Institution Department	**País Vasco University. School of Engineering of Bilbao, Department of Energy Engineering.**
Institutions involved in teaching	**País Vasco University. School of Engineering of Bilbao, Department of Energy Engineering.**
Location/Faculties	**School of Engineering of Bilbao**
Credits/Teaching hours	**120 ECTS/1,200 school hours**
Duration	**2 academic courses**
Type of teaching	**In-person**
Tuition fees	**2,000€ approx.**

Comments

This is one of the ten specialisations taught in the Master's Degree in Industrial Engineering. The demand in the nuclear sector is very high and few graduates enter the labour market, so there is a high demand for students who have studied this speciality.

Access the Master's website

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Charles Pinto
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2023/2024

Master's Degree in Physics: Radiation, Nanotechnology, Particle and Astrophysics

5

Summary

Its aim is to broaden the knowledge and employability of physics graduates, with a strong scientific and research orientation, students are introduced to research, and the training acquired facilitates their integration into the labour market, with the collaboration of teachers from hospitals and other public centres, and the carrying out of practical work with high-tech equipment.

UNIVERSIDAD DE GRANADA

Main information

University/Coordinating Institution Department	Granada University. Departments: Applied Physics, Theoretical and Cosmos Physics, Electronics and Computer Technology, Atomic, Molecular and Nuclear Physics, and Optics
Institutions involved in teaching	Granada University, Astrophysics Institute of Andalusia, San Cecilio Hospital, Malaga Hospital, Barcelona University, Málaga University and CIEMAT
Location/Faculties	Science Faculty. Granada University
Credits/Teaching hours	60 ECTS/420 school hours
Duration	1 year
Type of teaching	In-person
Tuition fees	Public registration fees. 820€ approx.

Comments

It offers three specialisations: radiation, nanotechnology, and particle and astrophysics. If you take 24 subjects in a single line, you get a mention in the degree. It has multiple lines of research in which to develop the Master's Thesis (TFM). All subjects are optional, with the exception of the TFM and the Guest Seminar.

Access the Master's website

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Fernando Vereda

2023/2024

Master's Degree in Enegy Engineering

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Summary

It is structured in three semesters. The first is common training, where a global vision of the energy sector is acquired, from its sources (fossil fuels, solar, wind, hydraulic, nuclear energy, etc.) to its applications. The second offers an itinerary of Nuclear Energy with 30 ECTS of compulsory nuclear subjects, with the possibility of intensifying the specialisation by taking 30 ECTS in the nuclear field during the third semester (Master's Final Project and Work Placement in Companies or Initiation to the Doctorate).

Main information

University/Coordinating Institution Department	**Polytechnic University of Madrid. High Technical School of Industrial Engineering**
Institutions involved in teaching	**Polytechnic Universityof Madrid**
Location/Faculties	**High Technical School of Industrial Engineering, High Technical School of Mining and Energy Engineers, and School High Technical School of Engineering and Industrial Design**
Credits/Teaching hours	**90 ECTS (further training if needed)**
Duration	**3 semesters**
Type of teaching	**In-person**
Tuition fees	**45,02€/ECTS (first registration)**

Comments

The nuclear pathway aims to train future professionals who can work in the nuclear sector with a general overview of the energy field. The itinerary includes technological subjects (related to fission, fusion and laser reactors and accelerators), computational simulation subjects (fundamental for the analysis of nuclear systems), and subjects linked to safety and the environment and the development of materials for energy applications.

Access the Master's website

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Javier Rodríguez
Nuria García

2023/2024

Master's Degree in Industrial Engineering

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Summary

Official Master's Degree that qualifies students to exercise the profession of Industrial Engineer, according to Order CIN/311/2009. It has a specialisation in Nuclear Engineering, in which, depending on the degree of origin, up to 20 ECTS of nuclear subjects are taken, with the additional possibility of doing the Master's Final Project of 15 ECTS with a nuclear engineering theme.

Main information

University/Coordinating Institution Department	National University of Distance Education (UNED)
Institutions involved in teaching	National University of Distance Education (UNED)
Location/Faculties	Distance learning, with the exception of the on-site internships which take place in Madrid.On-site exams in the place of the student's choice (Associate Centres in Spain or abroad)
Credits/Teaching hours	120 ECTS
Duration	2 academic courses
Type of teaching	Distance learning through a virtual platform, with telephone or face-toface student service hours in Madrid, and face-to-face practice and exams.
Tuition fees	16.22€/ECTS (first registration, 2022 -2023) or consult public prices

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Mercedes Alonso

2023/2024

Master's Degree in Industrial Engineering

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Summary

The Master's degree has a specialisation in Energy Techniques with an intensification in nuclear issues. The programme of the specialisation includes 6ECTS of compulsory specialisation subjects (Radiological Protection and Nuclear Safety/Radiation Technology) and up to 18ECTS of optional introductory Ph.D. courses in the Master's degree in Nuclear Science and Technology. Nuclear Engineering course of 12ECTS on "Design and Simulation of a Pressurised Water Nuclear Reactor".

Main information

University/Coordinating Institution Department	**Polytechnic University of Madrid. High Technical School of Industrial Engineering**
Institutions involved in teaching	**Polytechnic University of Madrid**
Location/Faculties	**High Technical School of Industrial Engineering (Madrid)**
Credits/Teaching hours	**120 ECTS**
Duration	**2 years**
Type of teaching	**In-person**
Tuition fees	**29,78€/ECTS (first registration, public prices 2022-2023)**

Comments

The Master's Degree in Industrial Engineering at the Polytechnic University of Madrid is accredited by the Accreditation Board for Engineering and Technology (ABET) and has the EUR-ACE quality seal. 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 per year). The Double Degree aims to unite the comprehensive training of the Industrial Engineer with a specialisation in the field of energy and industrial applications of nuclear fission and fusion energy.

Access the Master's website
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2023/2024

Master's Degree in Industrial Engineering. Speciality in Power Generation

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Summary

The Master's degree includes the core subject "Energy Expansion and Thermal Machines", which analyses content related to two-phase flow. In addition, within the Power Generation speciality, the subject "Nuclear Energy and Radiation" is taught, in which contents such as: Nuclear Reactors II, III, III+, Advanced Nuclear Reactors, Nuclear Safety/Technological Safeguards, Theory of Neutron Diffusion, etc. are studied.

UNIVERSITAT POLITÈCNICA DE VALÈNCIA

Main information

University/Coordinating Institution Department	**Universitat Politècnica de València. High Technical School of Industrial Engineering**
Institutions involved in teaching	**Universitat Politècnica de València**
Location/Faculties	**Universitat Politècnica de València, Vera Campus, Valencia (Spain)**
Credits/Teaching hours	**120 ECTS**
Duration	**2 years**
Type of teaching	**In-person**
Tuition fees	**17.34€/credit (2022/2023) Allows access to scholarships**

Comments

From the academic year 2023/2024, the Double Master's Degree in Industrial Engineering - Master's Degree in Nuclear Safety and Radiation Protection will start operating. Students enrolled in the Master's Degree in Industrial Engineering who are studying the speciality of Energy Generation can access the double master's degree.

Access the Master's website

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Sergio Gallardo

2020/2021

Master's Degree in Industrial Technologies Research

10

Summary

Official research-oriented master's degree. It has an itinerary in Energy Engineering with 9 ECTS of compulsory core subjects, and a 15 ECTS Final Master's Thesis that can be part of one of the international research programs in which the TECF3IR research group participates, such as ITER, IFMIF-DONES and DEMO, and can constitute the prelude to a doctoral thesis.

Main information

University/Coordinating Institution Department	National University of Distance Education (UNED)
Institutions involved in teaching	National University of Distance Education (UNED)
Location/Faculties	Distance learning and face-to-face exams at the Associated Centres in Spain or abroad
Credits/Teaching hours	60 ECTS
Duration	1 academic course
Type of teaching	Distance learning with face-to-face exams. Virtual platform and student service hours telematic or face-to-face in Madrid
Tuition fees	35.02€/credit (first registration, 2022-2023). Public prices

Comments

The Master's Thesis offers three lines of research in the field of nuclear engineering:

- L.19. Design of accelerator-assisted radioactive waste transmutation systems.
- L.20. Radioactive protection and safety in the design of high-intensity accelerators to simulate damage by irradiation of materials in nuclear fusion reactors.
- L.21. Safety and environmental impact in the design of experimental facilities and conceptual nuclear fusion power plants.

Access the Master's website

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