UNIVERSITAT POLITÈCNICA DE VALÈNCIA

ESCUELA TÉCNICA SUPERIOR INGENIERÍA INDUSTRIAL VALENCIA

# Master Degree
# in Industrial Engineering
## *Energy Specializations*

The Masters in Industrial Engineering provides students with a solid scientific background and a wide range of knowledge in various industrial technologies forging the same as multidisciplinary professionals to develop their professional work in industries, enterprises and in the public administration agencies, as well as the freelance.

## Distribution of credits

As incoming students is not mandatory to take the ECTS indicated on the academic plan, you can choose courses among the different specializations and choose between compulsory and optional courses.

| 1st year | 2nd year | | Total Credits |
|---|---|---|---|
| **Compulsory courses** | **Specialization and optional courses** | **Final Master's Thesis** | |
| 60 ECTS | 48 ECTS | 12 ECTS | 120 ECTS |

## First year – Compulsory courses

(ES – Spanish teaching, EF – English Friendly, EN – English teaching)

| Code | Course Name | Language | Term | ECTS Credits |
|---|---|---|---|---|
| 33805 | Management | EN/ES | 1A | 6 |
| 33804 | Operations management | EN/ES | 1A | 4.5 |
| 33809 | Heating, cooling and air conditioning | ES | 1A | 5.25 |
| 33810 | Fluid systems engineering | ES | 1A | 4.5 |
| 33813 | Industrial Instrumentation and Control | EN/ES | 1A | 4.5 |
| 33812 | Industrial & Chemical technology | EF/ES | 1A | 4.5 |
| 33803 | Project management | EN/ES | 1B | 4.5 |
| 33806 | Construction, Architecture and Industrial Urban Planning | ES | 1B | 5.25 |
| 33807 | Design and application of industrial equipment | ES | 1B | 7.5 |
| 33808 | Manufacturing Technology | ES | 1B | 4.5 |
| 33811 | Generation, Transmission and Distribution of Electric Power | EN/ES | 1B | 4.5 |
| 33814 | Advanced Energy and Thermal Machines | EN/ES | 1B | 4.5 |
| | | | **Total** | **60** |

## Second year – Specialization and optional courses

| Specialization courses | Optional courses | Final Master's Thesis | Total 2nd ECTS Credits |
|---|---|---|---|
| 39 | 9 | 12 | 60 |

** Regarding the specialization courses, you can choose among the offered courses since there are more than 39 ECTS per specialization. It is not necessary to take all the courses that are offered (60 ECTS).

- *Specialization: Use of energy* (ES – Spanish teaching, EF – English Friendly, EN – English teaching)

| Code | Course Name | Language | Term | ECTS Credits |
|---|---|---|---|---|
| 33761 | HVAC and domestic hot water | ES | 2A | 6 |
| 33759 | Cogeneration | ES | 2A | 4.5 |
| 33760 | Combustion engines | ES | 2A | 6 |
| 33764 | Energy audit | ES | 2A | 4.5 |
| 33762 | Energy efficiency in hydraulic systems | ES | 2A | 4.5 |
| 33763 | Energy efficiency in buildings | ES | 2A | 4.5 |
| 33765 | Advanced Hydraulic Machinery | ES | 2B | 4.5 |
| 33767 | Energy Simulation of Buildings (Use of Energy) | EN | 2B | 4.5 |
| 33768 | Introduction to Thermalhydraulic and its aplications | ES | 2B | 4.5 |
| 33766 | Mantenimiento de máquinas e instalaciones térmicas | ES | 2B | 4.5 |
| | | | **Total** | **60** |

- *Specialization: Power generation* (ES – Spanish teaching, EF – English Friendly, EN – English teaching)

| Code | Course Name | Language | Term | ECTS Credits |
|---|---|---|---|---|
| 33702 | Combustion and heat generation | ES | A | 4.5 |
| 33703 | Cooling and refrigeration systems | ES | A | 4.5 |
| 33705 | Nuclear energy and radiations | ES | A | 6 |
| 33704 | Power Plants | ES | A | 4.5 |
| 33706 | Hydroelectric power plants and wind power | ES | A | 6 |
| 33707 | Solar thermal and photovoltaic power plants | ES | A | 4.5 |
| 33708 | Nuclear Reactor Physics | ES | B | 4.5 |
| 33709 | Nuclear Safety | ES | B | 4.5 |
| 33710 | Advanced hydraulic machines | ES | B | 4.5 |
| 33712 | Energy simulation of buildings | EN | B | 4.5 |
| 33713 | Introduction to thermohydraulics introduction and its applications | ES | B | 4.5 |
| 33711 | Thermal Machines and Facilities Maintenance | ES | B | 4.5 |
| | | | **Total** | **60** |

- *Optional courses* (ES – Spanish teaching, EF – English Friendly, EN – English teaching)

| Code | Course Name | Language | Term | ECTS Credits |
|---|---|---|---|---|
| 35126 | Logistics and Supply Chain Processes_QA | EN | 2A | 4,5 |
| 34555 | Recruitment skills_QA | EN | 2A | 4,5 |
| 33794 | Acoustic engineering | ES | 2B | 4,5 |
| 33796 | Advanced Hydraulic Machinery. Optional | ES | 2B | 4,5 |
| 34252 | Advanced performance measurements systems | EN | 2B | 4,5 |
| 33770 | Application of artificial intelligence to processes management and engineering | ES | 2B | 4,5 |
| 33792 | Biomedical equipment | ES | 2B | 4,5 |
| 33780 | Computer vision | ES | 2B | 4,5 |
| 33776 | Construction Practicum | ES | 2B | 4,5 |
| 33789 | Design for Manufacturing | EN | 2B | 4,5 |
| 33778 | Eco-design. Consideration of environmental aspects in product design processes | ES | 2B | 4,5 |
| 33793 | Electric Vehicles | ES | 2B | 4,5 |
| 34553 | Energy and sustainable development | EN | 2B | 4,5 |
| 33790 | Energy Markets | EN | 2B | 4,5 |
| 33798 | Energy Simulation of Buildings (Optional) | EN | 2B | 4,5 |
| 33800 | Entrepreneurship and Innovation and Technology Management | EN | 2B | 4,5 |
| 33777 | Facilities Practicum | ES | 2B | 4,5 |
| 33779 | Industrial applications of solid modelling. | ES | 2B | 4,5 |
| 33775 | Industrial Quality Control | EN | 2B | 4,5 |
| 33801 | Innovation and Strategic Design | ES | 2B | 4,5 |
| 33785 | Inspection and Diagnosis of Service Failures | ES | 2B | 4,5 |
| 33772 | Integrated Enterprise Management System (ERP): Projects and Operations | ES | 2B | 4,5 |
| 33799 | Introduction to Thermal hydraulics and its applications. Optional | ES | 2B | 4,5 |
| 33795 | Life cycle assessment and carbon footprint | ES | 2B | 4,5 |
| 34554 | Logistics and supply chain processes_QB | EN | 2B | 4,5 |
| 33797 | Maintenance of thermal machines and related facilities | ES | 2B | 4,5 |
| 33781 | Mobile robotics | EN | 2B | 4,5 |
| 33771 | Negotiation and decision making | ES | 2B | 4,5 |
| 33783 | Operations Consulting | EN | 2B | 4,5 |
| 34254 | Organizational behaviour | EN | 2B | 4,5 |
| 33769 | Professional responsibility in engineering | EN | 2B | 4,5 |
| 33786 | Radiological protection in radioactive and nuclear facilities | ES | 2B | 4,5 |
| 33788 | Reciprocating Internal Combustion Engines | ES | 2B | 4,5 |
| 34251 | Recruitment skills_QB | EN | 2B | 4,5 |
| 34253 | Systematic innovative thinking for engineers and researchers | EN | 2B | 4,5 |
| 33784 | Welding and joining technology | ES | 2B | 4,5 |
| 33791 | Wind and Photovoltaic Electricity | ES | 2B | 4,5 |