



The Master in Industrial Engineering, designed according to the requirements of the Order CIN / 311/2009, enables for the exercise of the profession regulated in Industrial Engineering. 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. You can find more information about the degree [here](#).

## Distribution of credits

Compulsory courses	Optional courses	Master Thesis	Total ECTS Credits
60.00	48.00	12.00	120.00

## FIRST YEAR

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

## SECOND YEAR

Specialization courses	Optional Courses	Master Thesis	Total 2 <sup>nd</sup> Year
39 ECTS to choose among one branch	9 ECTS	12 ECTS	60 ECTS

Areas of specialty
Construction and industrial facilities
Process control, automation and robotics
Design and manufacture of product
Power generation
Electrical engineering
Electronic engineering
Mechanical engineering
Materials and biomaterials
Industrial organization and management
Sustainability and industrial environment
Nuclear energy
Energy generation

Construction and industrial facilities		
Code	Course Name	Credits
33679	Concrete structures	4.5
33678	Metallic structures	4.5
33682	Advanced Industrial Constructions	4.5
33681	Geotechnical Engineering and Foundation design	4.5
33683	Advances Fluid Systems	6
33684	HVAC and energy certification of buildings	6
33680	Seismic & Fire Engineering of Structures	4.5
33685	Electrical facilities in buildings	4.5

Process control, automation and robotics		
Code	Course Name	Credits
33686	Industrial automation	4.5
33687	Industrial robotics	6
33688	Control Engineering	6
33689	Advanced process control	4.5
33690	Industrial instrumentation	4.5
33691	Control System Implementation	4.5
33693	Modeling tools and processes simulation	4.5
33692	Identification and Control of Complex Dynamic Systems	4.5

Design and manufacture of product		
Code	Course Name	Credits
33695	Management of the digital representation of the product	4.5
33694	Advanced technology of the design assisted by computer	4.5
33698	Implementation of the design and manufacturing	6
33697	Manufacturing Advanced Technologies	4.5
33701	Generative product design	4.5
33700	User-Centered Design	6
33696	Animation and visual realism for the product presentation	4.5
33699	Quick prototype and reverse engineering	4.5

Use of energy		
Code	Course Name	Credits
33761	HVAC and domestic hot water	6
33759	Cogeneration	4.5
33760	Combustion engines	6
33764	Energy audit	4.5
33762	Energy efficiency in hydraulic systems	4.5
33763	Energy efficiency in buildings	4.5
33765	Advanced Hydraulic Machinery	4.5
33768	Introduction to Thermalhydraulic and its applications	4.5

Electrical engineering		
Code	Course Name	Credits
33714	Advanced electrical machines	6
33717	Design and control of low voltage installations	6
33718	Power electronics for electric drives and its impact on the grid	4.5
33719	Electrical substations. Insolation coordination and protection	4.5
33720	High voltage lines and networks	4.5
33721	Electric power systems	4.5
33715	Dynamic analysis and control of electronic actuators	4.5
33716	Electric traction and electric machines technology	4.5

Electronic engineering		
Code	Course Name	Credits
33722	Power electronics and energy generation systems	6
33723	Design of Power Electronics Systems	6
33724	Industrial instrumentation systems	6
33727	Advanced digital systems	6
33728	Digital systems with microcontrollers	6
33725	Network instrumentation and communications	4.5
33726	Industrial Process Automation	4.5

Mechanical engineering		
Code	Course Name	Credits
33729	Railways	4.5
33730	Automobiles	4.5
33731	Computational techniques in mechanical engineering	6
33732	Structural integrity and composite materials design	7.5
33733	Acoustics and vibrations	7.5
33734	Materials for design of machines	4.5
33735	Hydraulic and pneumatic systems	4.5

Materials and biomaterials		
Code	Course Name	Credits
33736	Industrial polymers	4.5
33737	Ceramic technology	4.5
33738	Advanced structural materials	4.5
33739	Surface Engineering	4.5
33740	Polymer Processing and Nanocomposites	4.5
33741	Structural integrity and composite materials	7.5
33742	Structural biomaterials	4.5
33743	Polymeric materials	4.5

Industrial organization and management		
Code	Course Name	Credits
33744	Operations Management (II)	6
33746	Applied Operations Research and Management	4.5
33747	Quality engineering	6
33748	Business Management Advanced	4.5
33749	Finance and Cost Management	4.5
33750	Innovation and technology management	4.5
33745	Lean manufacturing	4.5
33751	Enterprise Information Systems	4.5

Sustainability and industrial environment		
Code	Course Name	Credits
33753	Control and correction of atmospheric emissions	6
33752	Wastewater Treatment	6
33755	Prevention of industrial pollution	6
33756	Energy sustainability in buildings and industrial activities	6
33757	Waste and contaminated site management	6
33754	Water and Atmosphere pollutants dispersion	4.5
33758	Environmental impact of radiation	4.5

Power generation		
Code	Course Name	Credits
33702	Combustion and heat generation	4.5
33705	Nuclear energy and radiations	6
33706	Hydroelectric power plants and wind power	6
33707	Solar thermal and photovoltaic power plants	4.5
33710	Advanced hydraulic machines	4.5
33711	Machine maintenance and thermal installations	4.5
33712	Energetic simulation of buildings	4.5
33713	Thermohydraulics introduction and its applications	4.5
33703	Cooling and refrigeration systems	4.5
33708	Nuclear reactor physics	4.5
33709	Nuclear safety	4.5
33704	Power plants	4.5

Nuclear energy		
Code	Course Name	Credits
33702	Combustion and heat generation	4.5
33703	Generation and refrigeration installations	4.5
33704	Thermal plants	4.5
33705	Nuclear energy and radiations	6
33706	Hydroelectric power plants and wind power	6
33707	Thermo-solar plant and photovoltaic	4.5
33708	Reactor's physics	4.5
33709	Nuclear safety	4.5

Please find more information about the elective courses taught during the second year of the program [here](#).