

Master's degree in Automatic Systems and Industrial Electronics Engineering

The aim of the **master's degree in Automatic Systems and Industrial Electronics Engineering** is to produce top-level professionals in automation and industrial electronics. Automatic control and industrial electronics are crucial to the development of a society that is increasingly focused on information and knowledge as a basis for decision making, and essential for the functioning of any automatic or robotic control system. Graduates will be able to respond to the needs of sectors dealing with production processes and systems for generating, distributing and storing energy; the transport sector; and the logistics sector.

The aim of the specialisation in **Advanced Production and Automation Technologies** is to produce graduates who are specialised in automation and control and who are able to integrate company management with design, engineering and manufacturing processes. These graduates may pursue careers at any level of the computer-integrated manufacturing (CIM) pyramid. The aim of the specialisation in **Optimal Management of Electrical Energy** is to produce graduates who are specialised in the management of electrical energy, with an emphasis on integrating energy sources using power converters and on applying communication systems and electronic diagnosis and safety systems to the generation, distribution and storage of electrical energy. The specialisation involves the in-depth study of all systems that control and manage the demand and stability of the network, and takes a close look at renewable energies and smart grids. It also involves the study of electrical and hybrid traction systems that will be integrated in the network in the near future, in the form of electric vehicles and urban transport, and technology for implementing controllers. More information on [the web page of this master's degree](#).

Specialisations

- Optimal Management of Electrical Energy
- Advanced Production and Automation Technologies

GENERAL DETAILS

Duration and start date

1.5 academic years, 90 ECTS credits. Starting September and February

Timetable and delivery

Afternoons. Face-to-face

Fees and grants

Approximate fees for the master's degree, **excluding other costs** (does not include non-teaching academic fees and issuing of the degree certificate):

€2,490 (€9,496 for non-EU residents).

[More information about fees and payment options](#)

[More information about grants and loans](#)

Language of instruction

Check the language of instruction for each subject in the course guide in the curriculum.

Information on [language use in the classroom and students' language rights](#).

Location

[Terrassa School of Industrial, Aerospace and Audiovisual Engineering \(ESEIAAT\)](#)

Official degree

[Recorded in the Ministry of Education's degree register](#)

ADMISSION

General requirements

[Academic requirements for admission to master's degrees](#)

Places

40

Pre-enrolment

Pre-enrolment period open.

Expected deadline: 01/07/2024.

[How to pre-enrol](#)

Enrolment

[How to enrol](#)

Legalisation of foreign documents

All documents issued in non-EU countries must be [legalised and bear the corresponding apostille](#).

ORGANISATION: ACADEMIC CALENDAR AND REGULATIONS

UPC school

[Terrassa School of Industrial, Aerospace and Audiovisual Engineering \(ESEIAAT\)](#)

Academic coordinator

[Rita Maria Planas Dangla](#)

Academic calendar

[General academic calendar for bachelor's, master's and doctoral degrees courses](#)

Academic regulations

[Academic regulations for master's degree courses at the UPC](#)

CURRICULUM

| Subjects | ECTS credits | Type |
|--|--------------|------------|
| FIRST SEMESTER | | |
| Advanced Control Systems | 5 | Compulsory |
| Advanced Electronic Systems and Integration of Electrical Energy Sources | 5 | Compulsory |
| Applied Dynamics | 5 | Compulsory |
| Modelling and Control of Electrical Machines | 5 | Compulsory |
| Modelling and Control of Fluid Power Systems | 5 | Optional |
| Optimization and Simulation | 5 | Compulsory |
| Research Seminars | 10 | Optional |

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| | Applied Dynamics | 5 | Compulsory |
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| | Modelling and Control of Fluid Power Systems | 5 | Optional |
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| Specialisation in Specialisation in Optimal Management of Electrical Energy | Advanced Control Systems | 5 | Compulsory |
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| | Applied Dynamics | 5 | Compulsory |
| | Modelling and Control of Electrical Machines | 5 | Compulsory |
| | Modelling and Control of Fluid Power Systems | 5 | Optional |
| | Optimization and Simulation | 5 | Compulsory |
| | Research Seminars | 10 | Optional |
| SECOND SEMESTER | | | |
| Applications of Photonics Technologies | | 3 | Optional |
| Cyber-Physical Systems Scheduling | | 3 | Optional |
| Industrial Fluid Power | | 3 | Optional |
| Industrial IOT and Cyber-Physical Systems | | 3 | Optional |
| IOT Engineering | | 3 | Optional |
| Microfluids and MEMS for Smart Sensors and Actuators | | 3 | Optional |
| Project Management | | 10 | Compulsory |
| Relationship with the Company | | 3 | Optional |
| Safety Automation Projects for Industry 4.0 | | 3 | Optional |
| Smart Grids & Data Analytics | | 3 | Optional |
| Smart Sensors and Actuators for Internet of Things (IOT) | | 3 | Optional |

| Subjects | | ECTS credits | Type |
|--|--|--------------|------------|
| Specialisation in Specialisation in Advanced Production and Automation Technologies | Artificial Intelligence Techniques and Automation Applications | 5 | Compulsory |
| | Data Processing, Storage, Validation and Automated Production Management | 5 | Compulsory |
| | Drive Control and Electric Drive Train | 5 | Optional |
| | Emc and Power Quality | 5 | Optional |
| | Energy Efficiency Supervision and Control | 5 | Optional |
| | Integrated Production Systems | 5 | Compulsory |
| | Microgrids and Energy Optimization | 5 | Optional |
| | Transport Logistics and Storage | 5 | Compulsory |
| | Applications of Photonics Technologies | 3 | Optional |
| | Cyber-Physical Systems Scheduling | 3 | Optional |
| | Industrial Fluid Power | 3 | Optional |
| | Industrial Iot and Cyber-Physical Systems | 3 | Optional |
| | Iot Engineering | 3 | Optional |
| | Microfluids and Mems for Smarts Sensors and Actuators | 3 | Optional |
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| | Smart Sensors and Actuators for Internet of Things (Iot) | 3 | Optional |
| THIRD SEMESTER | | | |
| | Photonics Sensors and Laser Technology | 5 | Optional |
| | Master's Thesis | 15 | Project |
| Specialisation in Specialisation in Advanced Production and Automation Technologies | Diagnosis and Power Storage | 5 | Optional |
| | Microgrids | 5 | Optional |
| | Nano&Microtechnology | 5 | Optional |
| | Real-Time Embedded Systems | 5 | Optional |
| | Robotized Processes | 5 | Compulsory |
| | Technological Workshops | 5 | Optional |
| | Photonics Sensors and Laser Technology | 5 | Optional |
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