Master's degree in Semiconductor Engineering and Microelectronic Design

The **master's degree in Semiconductor Engineering and Microelectronic Design** (master's degree web) aims to provide advanced and specialised scientific and technological training in the design and manufacture of integrated, digital and analogue circuits, with an emphasis on applying them in memory systems, communication systems, control systems, computing systems, sensors and emerging devices, such as 2D and quantum devices.

The aim is thus to cover the current shortage of professionals who have this kind of training, which is highly valued in industry at the Spanish and European levels and in research into semiconductor technologies. The master's degree offers comprehensive training that combines the resources and academic excellence of participating universities, which have years of experience in education and research in semiconductor engineering and microelectronic design, and the participation of the Spanish National Research Council's IMB-CNM, the leading centre in microelectronic technologies.

It is an interuniversity master's degree coordinated by the UPC, with the participation of the Universitat de Barcelona (UB), the Universitat Autònoma de Barcelona (UAB) and the Universitat Rovira i Virgili (URV), and the strategic collaboration of the Institute of Microelectronics of Barcelona (IMB-CNM) of the Spanish National Research Council (CSIC).

Specialisations

- Semiconductor Engineering
- Microelectronic Design

GENERAL DETAILS

Duration and start date
1 academic year, 60 ECTS credits. Starting September

Timetable and delivery
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):
€1,660 (€6,331 for non-EU residents).
More information about fees and payment options
More information about grants and loans

Language of instruction
English

Information on language use in the classroom and students' language rights.

Location
Barcelona School of Telecommunications Engineering

ADMISSION

General requirements
Academic requirements for admission to master's degrees

Places
30

Pre-enrolment

Pre-enrolment closed (consult the new pre-enrolment periods in the academic calendar).
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.

PROFESSIONAL OPPORTUNITIES

Professional opportunities

- Clean room technician.
- Integrated circuit designer.
- Researcher at related research centres.

Competencies

Generic competencies

Generic competencies are the skills that graduates acquire regardless of the specific course or field of study. The generic competencies established by the UPC are capacity for innovation and entrepreneurship, sustainability and social commitment, knowledge of a foreign language (preferably English), teamwork and proper use of information resources.

ORGANISATION: ACADEMIC CALENDAR AND REGULATIONS

UPC school

Barcelona School of Telecommunications Engineering (ETSETB)

Participating institutions

Universitat Politècnica de Catalunya (UPC) - **coordinating** university
Universitat Autònoma de Barcelona (UAB)
Universitat de Barcelona (UB)
Universitat Rovira i Virgili (URV)

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		
Microelectronic Design	6	Compulsory
Microelectronic Technologies and Processes	6	Compulsory

Subjects		ECTS credits	Type
Specialisation in Specialisation in Microelectronic Design	Analog Ic Design	6	Compulsory
	Integrated Circuits Physical Design	6	Compulsory
	Soc Design and Verification	6	Compulsory
	Microelectronic Design	6	Compulsory
	Microelectronic Technologies and Processes	6	Compulsory
Specialisation in Specialisation in Semiconductor Engineering	Packaging, Characterization and Reliability	6	Compulsory
	Semiconductor Devices	6	Compulsory
	Semiconductor Facilities and Device Manufacturing	6	Compulsory
	Microelectronic Design	6	Compulsory
	Microelectronic Technologies and Processes	6	Compulsory
SECOND SEMESTER			
Innovation, Entrepreneurship and Leadership		6	Compulsory
Seminars on Microelectronic Industry and Advanced Research		2	Compulsory
Master's Thesis		10	Project
Specialisation in Specialisation in Microelectronic Design	Advanced IP Core Design	4	Optional
	Asic Design Techniques for High Secure Systems	4	Optional
	Integrated Sensors and Circuits for Imagers and Radiation Detectors	4	Optional
	Mixed Signal IP Design	4	Optional
	Power Management Circuits in Asics	4	Optional
	RF Ic Design	4	Optional
	Innovation, Entrepreneurship and Leadership	6	Compulsory
	Seminars on Microelectronic Industry and Advanced Research	2	Compulsory
	Master's Thesis	10	Project
Specialisation in Specialisation in Semiconductor Engineering	Emerging Technologies for Computing	4	Optional
	Flexible and Printed Electronics	4	Optional
	Integrated Photonics	4	Optional
	Material Characterization	4	Optional
	Microsensors	4	Optional
	Power Devices and Systems	4	Optional
	Innovation, Entrepreneurship and Leadership	6	Compulsory
	Seminars on Microelectronic Industry and Advanced Research	2	Compulsory
	Master's Thesis	10	Project