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.

ADMISSION

General requirements
Academic requirements for admission to master's degrees

Places
30

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.

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		
Analog Ic Design	6	Optional
Integrated Circuits Physical Design	6	Optional
Microelectronic Design	6	Compulsory
Microelectronic Technologies and Processes	6	Compulsory
Packaging, Characterization and Reliability	6	Optional
Semiconductor Devices	6	Optional

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