



Master Degree in MICROELECTRONICS

DESIGN AND APPLICATIONS OF MICRO/NANOSCALE SYSTEMS

GETTING INFORMATION:

www.masteroficial.us.es
www.us.es/estudios/master/master_M099
www.mastermicroelectronica.us.es
www.us.es/centros/propios/centro_10

The Master is taught online through the Virtual Learning platform of the University of Seville and the support for practical activities of the Institute of Microelectronics of Seville.

Center:

Faculty of Physics, University of Seville

Email:

master_info@imse-cnm.csic.es

Pre-registration:

www.juntadeandalucia.es/innovacioncienciayempresa/sguit



DURATION OF STUDIES

1 academic year - 60 credits (ECTS).

OBJECTIVES

The primary objective of this **online Master** is to train students so that they can reach high scientific and technical qualifications at teaching, professional or research level. To this end, it provides a modern, updated and useful perspective in Micro- and Nano-electronics Science and Technology. In particular, it is proposed to exercise students in disciplines to conceive, design, verify, manufacture and test integrated circuits and systems, especially in submicron technologies, as well as to integrate them in specific applications on demand.

It is intended that students acquire skills and knowledge in each and every of the following profiles:

- Methodologies, techniques, procedures and CAD tools for micro- and nano-electronic design.
- Micro- and nano-electronic technologies and devices.
- Design, integration and test of digital, analog, mixed-signal and radio frequency (AMS/RF) integrated circuits and systems.
- Techniques for conception and evaluation of integrated systems and applications.
- Project management in the semiconductor industry.

Master Degree in Microelectronics

ADMISSION CRITERIA AND SELECTION OF STUDENTS

Admission is limited to a maximum of 30 students, mainly selected upon their academic record in a Bachelor Degree or equivalent and their adequacy to the Master profile. If necessary, other academic, scientific or professional merits would also be considered.

PROFILES WITH ADMISSION PRIORITY

It is compulsory that applicants have completed an official degree in a scientific/technical area. Those applicants whose profile is related to the disciplines of the Master (graduates in Physics, Telecommunication Engineering, Electrical Engineering and Computer Engineering, not excluding degrees of similar nature) will have priority. Prior scientific-technical knowledge shall cover the areas of Physics, Mathematics, Electronics and Electromagnetism.

GENERAL RESEARCH LINES

The University departments involved in the proposed Master and the Institute of Microelectronics of Seville have very active research groups in the field of Microelectronics. Passing this Master in Microelectronics allows direct admission to the Doctoral Program of the University of Seville entitled "Physical Sciences and Technologies" (<http://institucional.us.es/doctoradocytff/>), under the supervision of a faculty member or researcher, in any of the following research lines:

- High performance VLSI CMOS digital design
- Design of circuits and systems with beyond-CMOS nano-electronic devices

- Bio-electronic systems
- Integrated and heterogeneous microsystems
- Design of analog, digital, mixed-signal and RF integrated circuits and systems
- Antennas and microwave circuits
- Techniques for systematic design of integrated circuits and systems
- Systems based on soft computing
- Test and design for testability of integrated circuits and systems
- Embedded systems

PROGRAM STRUCTURE AND BRIEF DESCRIPTION OF CONTENTS

Given the virtual nature of the Master, all courses are prepared to be taught online. It is not therefore mandatory for a student to be present at the premises of the University of Seville (USE) during the development of courses, provided you have available computing and telematic resources that enable teaching in a virtual environment. This feature, however, does not exclude the possibility that a student, if she/he has availability and funding for it, can move to the premises of USE to take courses and develop practical activities.

The training core of the Master comprises four 6-credit compulsory courses listed below:

- Micro- and nano-devices and technologies
- Digital, analog, mixed-signal and RF (AMS/RF) integrated circuits
- Applications, systems and techniques for information processing
- Design methodologies and CAD tools

Along with these four courses, compulsory for all of the students, each student will choose one out of **four possible concentrations**. Three of these routes require taking three electives that form the core of each corresponding training concentration. These three concentrations are:

- Circuits and systems for wireless communications
- Circuits and systems for acquisition and processing of sensory signals
- Advanced design and test techniques for nano-scale circuits, devices and emerging applications

The fourth route, called "Generic Concentration", allows students to choose any elective among those offered.

SCHOLARSHIPS

For specific information about available scholarships, please check the following website from the University of Seville:

- www.us.es/estudios/becasyayudas/index.html

