



Complements of Computer Science Master programme

The Master program allows students to increase their knowledge and understanding of computers and their systems through lectures, projects, practical labs and supervised research. The Master program offers significant advantages to students, allowing them to build upon prior knowledge and focus their education on specific key areas in Computer Science.

Professional competencies offered by the program:

1. Theoretical knowledge of:

- a) concepts, principles and methodologies of development in the field of computers and information technology in the studied sub-domains: Operating Systems, Distributed Systems, Computer Networks, Programming Engineering, etc.
- b) use of Information Technology in complementary domains, subdomains studied: Image Processing, Introduction to Artificial Intelligence, Data and Knowledge Management.

2. Abilities and skills to:

- develop, test and use computerized systems applicable in different areas - develop, test, use and evaluate integrated systems
- applicative interdisciplinary analysis, making a technical presentation, communication and management skills
- understanding how ITC concepts can be applied in different processes in complementary areas to make them more efficient
- analyze the effects of IT application in various complementary areas
- relevant data analysis in complementary areas to extract relevant information
- understand the principles and use the different computing platforms: Windows, Linux
- Understand the principles of different types of specific systems: database management systems, specialized information systems (ERP, MIS, FIS, DMS, etc.).

3. Experience in research through:

- the project and the half-yearly report on the research carried out
- elaboration of at least one scientific article - presented at a national and international scientific manifestation.

The professional competence in the field of research lies in the ability to:

- a) identify the results of previous research relevant to the current theme
- b) establish the specific objectives of each research theme
- c) organize information and use in the context of the research theme
- d) develop a detailed scientific report



e) ability to write a scientific paper and present it in front of an audience.

Cross-curricular competences:

1. Exercise of complex professional tasks in the conditions of autonomy and professional independence
 - Problem solving and decision making in a complex and unpredictable context,
 - Ability to write and present written materials and speeches,
 - Critical thinking and analysis abilities, knowledge of research methodology,
 - Ability to communicate and convey the assimilated knowledge to a different audience.
2. Assuming the leading roles in professional groups or institutions
 - Ethical support,
 - Developing advanced oral and written communication skills in native and foreign languages,
 - Ability to coordinate, organize and control in multicultural contexts,
 - Accepting diversity of opinion and attitudes and the ability to evaluate them.
3. Self-control of the learning process, diagnosis of training
 - Reflexive analysis of own professional activity
 - Capacity to self-assess their own knowledge and performance,
 - Learning ability and personality development, flexibility.

Research Centers

Computer Science Department

- [Image Processing and Pattern Recognition Research Center](#)
- [Distributed Systems Research Laboratory](#)
- [Computer Graphics and Interactive Systems Laboratory](#)
- [Intelligent Systems Group](#)
- [Embedded and Dedicated Computer Systems Laboratory](#)
- [Knowledge Engineering Group](#)
- [Communications Networks and Protocols Research Lab](#)
- [Advanced Computing Application Laboratory](#)
- [Foundations and Applications of Advanced Software Technology Research Group](#)
- [Intelligent Embedded Systems](#)



Curriculum

Year 1 (Total ECTS 60)

Compulsory Courses, 1st year

Course Code	Course Name	Credits	Semester
1.00	Fundamentals of Computer Architectures	7	1
2.00	Computer Programming	7	1
3.00	Databases	7	1
4.00	Statistics and Probabilities	7	1
5.00	Complements of Computer Science 1 - Project	2	1
6.00	Fundamentals of Object Orientation Programming	7	2
7.00	Fundamental Algorithms	7	2
8.00	Software design	7	2
10.00	Complements of Computer Science 2 - Project	2	2

Elective courses (the student needs to select one course of 7 ECTS), 1st year

Course Code	Course Name	Credits	Semester
9.10	Database Design	7	2
9.11	Knowledge-based Systems	7	2
9.12	Computer Network Design	7	2
9.13	Computer Networks Administration	7	2
9.14	WEB Applications Development	7	2
9.15	Image Processing	7	2
9.16	Systems and Applications Security	7	2
9.17	Wireless Technologies and Mobile Devices	7	2
9.18	Operating Systems	7	2
9.19	Data Structures and Algorithms	7	2
9.20	Fundamental Programming Techniques	7	2



Year 2 (Total ECTS 60)

Compulsory Courses, 2nd year

Course Code	Course Name	Credits	Semester
11.00	Computer Networks	5	1
15.00	Introduction in Economics	4	1
16.00	Project Elaboration Methodology	5	2
17.00	Research Activity 4/Practical Placement	15	2
18.00	Dissertation Work	10	2
19.00	Defense of Dissertation Thesis	10	2

Elective courses 2nd year

Course Code	Course Name	Credits	Semester
12.10	Operating Systems Administration	7	1
12.20	Introduction to Artificial Intelligence	7	1
12.30	Data Warehouse and Business Intelligence	7	1
13.10	Multimedia Technologies	7	1
13.20	Databases Administration	7	1
13.30	Industrial Informatics	7	1
14.10	Pattern Recognition Systems	7	1
14.20	Distributed Systems	7	1
14.30	User Interface Design	7	1