Competències de la titulació

11/06/2012

 Total competències: 42

Generical

- 09 CSCT N3 ABILITY TO CONCEIVE, DESIGN, IMPLEMENT AND OPERATE COMPLEX ICT SYSTEMS. Level 3. To identify market needs and opportunities. To collect information to prepare specifications for a new product, process or service. To prepare a basic business plan. To conceive a new product, process or service. To develop and implement planning of a design process. To carry out the various phases of the design process.
- 10 ECI N3 EXPERIMENTATION AND KNOWLEDGE OF TOOLS AND INSTRUMENTS. Level 3. To design experiments and measurements to test hypotheses and validate the operation of equipment, processes, systems or services in the field of ICT. To select the appropriate equipment or software tools. To critically assess their specifications. To perform advanced analysis of collected data.
- 09 CSC EF ABILITY TO CONCEIVE, DESIGN, IMPLEMENT, AND OPERATE COMPLEX PHYSICAL ENGINEERING SYSTEMS.
  Ability to conceive, design, implement, and operate complex systems in the fields of micro and nano technology, electronics, advanced materials, photonics, biotechnology, and space and nuclear sciences.

- 09 CSCT N1 ABILITY TO CONCEIVE, DESIGN, IMPLEMENT AND OPERATE COMPLEX ICT SYSTEMS. Level 1. To identify the processes involved in the life cycle of a product, process or service and the functions of engineering. To assess the need for a systematic design process. To identify and perform the steps of a product design specification document (PDS). To complete and improve planning and specification documents. To apply a systematic design process in the stages of implementation and operation. To prepare progress reports of a design process. To handle support tools for project management. To prepare a final report for a simple design process. To understand the basic economic aspects associated with the product, process or service that is being designed.
- 08 CRPE N3 ABILITY TO IDENTIFY, FORMULATE AND SOLVE ENGINEERING PROBLEMS Level 3. To identify and model complex systems. To Identify methods and tools appropriate to pose the equations and descriptions associated with the models and to solve them. To carry out qualitative analysis and approaches. To determine the uncertainty of the results. To formulate hypotheses and experimental methods to validate them. To set up and manage undertakings. To identify major components and establish priorities. To develop critical thinking.
- 08 CRPE ABILITY TO IDENTIFY, FORMULATE AND SOLVE ENGINEERING PROBLEMS. To plan and solve engineering problems in the ICT with initiative, making decisions and with creativity. To develop a method of analysis and problem solving in a systematic and creative way.
- 08 CRPE N2 ABILITY TO IDENTIFY, FORMULATE AND SOLVE ENGINEERING PROBLEMS Level 2. To identify, model and pose problems starting from open situations. To explore the alternatives to solve the problem and to choose the best one according to a justified criterion. To know-how to make approaches. To propose and implement methods to validate the solutions. To have a complex system vision and of interactions among complex systems components
- 08 CRPE N1 ABILITY TO IDENTIFY, FORMULATE AND SOLVE ENGINEERING PROBLEMS Level 1.To identify the complexity of the problems presented in the subjects. To set out correctly the problem correctly from the statements suggested. To identify the possible options for its resolution. To choose an option, apply it and to identify the need to change it in case of fail. To provide tools and methods to test whether the solution is correct or at least consistent. To identify the role of creativity in science and technology
- 10 ECI N2 EXPERIMENTATION AND KNOWLEDGE OF TOOLS AND INSTRUMENTS. Level 2. To use by oneself the tools, instruments and software applications available in the laboratories of basic and advanced subjects. To understand the operation and limitations of these tools. To understand their manuals and specifications. To analyse the results of the measurements and simulations critically. To perform advanced analysis using the collected data.
- 10 ECI EF EXPERIMENTATION AND KNOWLEDGE OF TOOLS AND INSTRUMENTS. Coping comfortably in a physical engineering lab environment. Operating physical engineering tools and instruments, and interpreting their manuals and specifications. Evaluating the errors and limitations of measurements and simulation results.

- 09 CSCT ABILITY TO CONCEIVE, DESIGN, IMPLEMENT AND OPERATE COMPLEX ICT SYSTEMS. To cover the complete life cycle (conception, design, implementation and operation) of a product, process, system or service in the field of ICT. This involves the writing and development of projects in the field of the expertise chosen, knowledge of the basic subjects and technologies, decision making, managing the activities object of the projects, the measurements, calculations and evaluations,

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handling specifications, standards and regulations must be complied with, assessing social and environmental impact of the technical solutions adopted, and assessing economic, material and human resources involved in the project, with a systemic and integrative headway.

- 10 ECI N1 EXPERIMENTATION AND KNOWLEDGE OF TOOLS AND INSTRUMENTS. Level 1. To know and correctly use tools, instruments and software applications available in the laboratories of basic subjects. To follow the instructions of lab manuals, to collect utile data from the measurements and test it.
- 08 CRPE EF ABILITY TO IDENTIFY, FORMULATE, AND SOLVE PHYSICAL ENGINEERING PROBLEMS. Planning and solving physical engineering problems with initiative, making decisions and with creativity. Developing methods of analysis and problem solving in a systematic and creative way.
- 09 CSCT N2 ABILITY TO CONCEIVE, DESIGN, IMPLEMENT AND OPERATE COMPLEX ICT SYSTEMS. Level 2. To identify the user needs and to develop a definition of product, process or service and its initial specifications. To prepare a specification of the design process. To design and follow a management model of the design process based on a standard. To know the steps associated with the phases of design, implementation and operation. To consistently use the knowledge and tools acquired in different subjects in the process of design and implementation. To evaluate and propose improvements to the design. To evaluate the implementation of legislation, rules and regulations of telecommunications at a national, European and international level.
- 10 ECI EXPERIMENTATION AND KNOWLEDGE OF TOOLS AND INSTRUMENTS. To cope comfortably in a ICT lab environment. To operate tools and instruments for telecommunications and electronics engineering and to interpret their manuals and specifications. To evaluate the errors and limitations of measurements and simulation results.

Specific

- FG1 Knowledge of the scientific method and its applications in physics and engineering. Ability to formulate hypotheses and make critical analysis of scientific problems in the field of physics and engineering. Ability to relate the physical reality with their mathematical models and vice versa.
- BIOC1 Ability to describe in general the structure of living things, from cellular to systemic level. Ability to analyze the constraints imposed by the physics laws to the development of biological systems, and the biological solutions to engineering problems.
- FQES2 Knowledge of the interactions at different matter scales. Ability to analyze functional capabilities of physical systems at various scales.
- FN1 Knowledge of technologies for nuclear energy production, radiation sensors and of ionizing radiation effects. Ability to detect radiation, calculate its effects on matter, devices and living beings, and establish appropriate levels of radiation protection.
- FG2 Ability to solve basic problems in mechanics, elasticity, thermodynamics, fluids, waves, electromagnetism and modern physics, and its application in solving engineering problems.
- CE2 Knowledge of the mechanisms of propagation and transmission of electromagnetic waves. Ability to analyze and use transmitter and receiver devices.
- MAT1 Ability to solve math problems that may arise in engineering. Ability to apply knowledge about linear algebra, geometry, differential geometry, differential and integral calculus, ordinary and partial differential equations, probability and statistics.
- QUIM2 Knowledge of the organic chemistry basis and their use in the production of complex materials and biological systems. Ability to develop the activity in a chemistry lab and produce compounds and/or materials.
- CE1 Knowledge of electromagnetism laws. Ability to solve engineering problems: magnetism, electricity and electrical technology, electromagnetic waves and wave optics.
- CIE1 Ability to model complex phenomena at planetary, stellar, galactic and cosmological scales. Ability to obtain information from spectroscopic and photometric

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Specific

	characteristics of astronomical objects. Ability to develop techniques and instrumentation for astronomical use.
- TS1	Understanding and mastering the basic concepts of linear systems, and functions and their transforms in the continuous and discrete domains. Ability to analyze signals with noise, applying the Wiener-Khinchin theorem and calculate the averaged power spectrum. Ability to sample and filter signals.
- ELEC1	Understanding the physics of semiconductors. Knowledge of microelectronic devices and their applications in nanotechnology, biophysics, photonics and communications. Ability to analyze the performance of electronic devices and integrated circuits.
- TFG	Ability to develop an original exercise to perform individually and to present and defend in a university court, consisting of a physical engineering project that depicts the skills acquired in the degree.
- BIOC2	Ability to analyze biological systems as complex systems.
- FOT1	Knowledge and understanding of the interaction between radiation and matter in photonic systems. Knowledge of photonic devices and ability for using them. Knowledge of applications in nanotechnology, materials science, communications and biophysics.
- NANO1	Knowledge of matter properties at the nanoscale. Knowledge of nanomaterials synthesis methods and nanodevices production. Ability to use technology manipulation of matter at the nanoscale. Knowledge of nanotechnology applications.
- FEPE1	Knowledge of experimental techniques and procedures in the field of physics, engineering and nanotechnology. Ability to design experiments using the scientific method and criteria of efficiency, rationality and cost.
- QUIM1	Knowledge of the chemistry laws. Knowledge of the main chemical methods of producing materials and nanomaterials. Ability to conduct and analyze basic chemical reactions.
- INF2	Ability to solve problems in physics and engineering using fundamental numerical methods: experimental data processing, interpolation, roots of nonlinear equations, numerical linear algebra and optimization, quadrature and integration of differential equations, properly weighting their different aspects (accuracy, stability and efficiency or cost).
- INF1	Understanding and mastery of computer programming, use of operative systems and computational tools (scientific software). Skills to implement numerical algorithms in languages of low (C, F90) and high (Matlab) level.
- TC1	Knowledge of control theory. Knowledge of feedback procedures. Ability to design a process control system.
- FQES3	Knowledge of structural and functional applications of materials. Knowledge of the physical systems of low dimensionality. Ability to identify systems and/or materials suitable for different engineering applications.
- FEPE2	Knowledge of experimental data analysis techniques. Knowledge of statistical methods for experimental data treatment. Ability to process, analyze and graphically present experimental data.
- MAT2	Ability to select numerical and optimization methods suitable for solving physical and engineering problems. Ability to apply the knowledge of numerical algorithms and optimization.
- TFF1	Ability to solve problems in thermodynamics, heat transfer and fluid mechanics, in the fields of physics, aerodynamics, geophysics and engineering.
- CIE2	Application of the technology to space science and space missions. Ability to design materials and components of the payload of a space mission. Ability to participate in the design of artificial satellite subsystems.
- FQES1	Knowledge of the structure of matter and its properties at molecular and atomic level. Ability to analyze the behavior of materials, electronics and biophysical systems, and the interaction between radiation and matter.