

**Información del Plan Docente**

<b>Academic Year</b>	2017/18
<b>Faculty / School</b>	100 - Facultad de Ciencias
<b>Degree</b>	447 - Degree in Physics
<b>ECTS</b>	5.0
<b>Year</b>	4
<b>Semester</b>	First semester
<b>Subject Type</b>	Optional
<b>Module</b>	---

**1.General information****1.1.Introduction****1.2.Recommendations to take this course****1.3.Context and importance of this course in the degree****1.4.Activities and key dates****2.Learning goals****2.1.Learning goals****2.2.Importance of learning goals****3.Aims of the course and competences****3.1.Aims of the course****3.2.Competences****4.Assessment (1st and 2nd call)****4.1.Assessment tasks (description of tasks, marking system and assessment criteria)****5.Methodology, learning tasks, syllabus and resources****5.1.Methodological overview**

The proposed learning/teaching methodologies for achieving requested goals and acquiring the necessary skills are as follows

- Theory sessions
- Problem solving sessions
- Lab practices

- End of term project

### 5.2.Learning tasks

The arrangement of activities, according to credits, is as follows:

Theory+Problem solving sessions: 4 ECTS

Lab Practices: 1 ECTS

### 5.3.Syllabus

Topics to be developed during theory sessions:

- 1.-Boolean algebra and logic functions
- 2.-Digital circuits: logic gates and typical parameters
- 3.-Combinational systems: multiplexors, demultiplexors and encoders
- 4.-Binary arithmetic: signed numbers and basic operations
- 5.-Sequential systems: architectures and functional description
- 6.-Registers and counters
- 7.-Field programmable gate arrays: FPGA
- 8.-Microcontrollers: design and programming

Lab practices:

- 1.- Combinational systems: multiplexors and encoders
- 2.- Binary arithmetic: adders, comparators, ALU's
- 3.- Sequential systems: bistables, registers and counters
- 4.- Design of an application system

### 5.4.Course planning and calendar

Face-to-face sessions and reports delivery

The arrangement of activities, according to credits, is as follows:

Theory+Problem solving sessions: 4 ECTS

Lab Practices: 1 ECTS

The arrangement of activities will depend on the academic calendar of the year.

Face-to-face sessions

Theory sessions

Lab practices

Reports delivery

End of term project.

### 5.5. Bibliography and recommended resources

- BB Deschamps, J. P.. Synthesis of Arithmetic Circuits: FPGA, ASIC and Embedded Systems. Wiley. 2005
- BB Floyd, Thomas L.. Fundamentos de sistemas digitales / Thomas L. Floyd ; traducción Vuelapluma ; revisión técnica Eduardo Barrera López de Turiso . - 9ª ed. Madrid [etc.] : Pearson Educación, D. L. 2006
- BB Roth, Charles H.. Fundamentos de diseño lógico / Charles H. Roth ; revisión técnica, Sebastián Dormido Bencomo, M<sup>a</sup> Antonia Canto Díez, Sergio Soto Hidalgo . - 5ª ed. Madrid [etc.] : Thomson, D.L. 2004
- BB Serna Ruiz, A.. Lógica Digital y Microprogramable. Paraninfo, 2000
- BB Wakerly, John F.. Diseño digital principios y prácticas / John F. Wakerly ; Traducción Raymundo Hugo Rangel Gutierrez ; Revisión técnica Isabel Quintas . - 1a ed. en español, trad. de 3rd english ed. México [etc] : Pearson, 2001