

<b>Centre</b>	<b>University College of Engineering of Vitoria-Gasteiz</b>
<b>Name of subject</b>	<b>25996 – Digital Electronic Systems</b>
<b>Qualification</b>	<b>Degree in Industrial Electronic Engineering and Automatics</b>
<b>Type</b>	<b>Compulsory</b>
<b>Credits</b>	<b>6 ECTS</b>
<b>Year</b>	<b>3</b>
<b>Term(s)</b>	<b>2nd</b>
<b>Department</b>	<b>Electronic Technology</b>
<b>Language</b>	<b>Spanish</b>

## Outcomes / Objectives

Study, design and applications of microprocessors

## Syllabus

- 8051 architecture:

Data and code memories

Interrupts and integrated peripherals

Assembly programming.

- Asynchronous communications: RS232 and RS485.

- Synchronous communications: I2C and SPI applied to LED drivers or ADCs

- I/O peripheral and external monitors.

Keyboard reading, LCDs, watchdogs and voltage supervisors.

- PLD, CPLD and FPGA architectures.

- Hardware programming languages: VHDL.

Modelling, simulation and synthesis.

Combinational and sequential systems implementation.

Design and implementation of logic problems using VHDL.

## Methodology

### Teaching Method

#### Face-to-Face Teaching Hours

Lectures	Seminars	Classroom practice	Lab. practice	Computer sessions	Clinical practice	Workshops	Industrial workshops	Field practice
45			15					

#### Student Hours of Non Face-To-Face Activities

Lectures	Seminars	Classroom practice	Lab. practice	Computer sessions	Clinical practice	Workshops	Industrial workshops	Field practice
24			66					

## Assessment System

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### General criteria

### Clarification regarding assessment

## Compulsory materials

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Microcontroller development cards and programmable logic device

## Bibliography

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### Basic Bibliography

- Microcontroladores MCS-51. Angel M<sup>a</sup> Aledo Amorós class notes
- Prácticas Básicas con microcontroladores. José Miguel Gil-García notes
- VHDL Lenguaje estándar de diseño electrónico. Teres et. Al. McGraw Hill

### In-depth Bibliography

- Microcontroladores MCS-51 y MCS-251. J. Matas y R.R. Ramos. Edicions UPC. 2001
- C and the 8051 Vol.I y II. Thomas W.Schultz
- The designer's guide to VHDL Ashenden, Peter Morgan Kaufmann
- The students guide to VHDL

### Websites

- URLs of interest are provided in each 02 chapter
- [www.embedded.com](http://www.embedded.com)[www.8052.com](http://www.8052.com)