

Centre	University College of Engineering of Vitoria-Gasteiz
Name of subject	25993 – Digital Electronics
Qualification	Degree in Industrial Electronic Engineering and Automatics
Type	Compulsory
Credits	6 ECTS
Year	3
Term(s)	1st
Department	Electronic Technology
Language	Spanish

Outcomes / Objectives

Digital systems, analysis and design.

Syllabus

Devices in switching applications. Bipolar transistor in switching applications. MOS transistor in switching applications. Non-regenerative circuits, resistive, capacitive and inductive load. Regenerative circuits, multivibrators. Boolean algebra. Definition. Properties and application. Logic equations and truth tables. Logic gates. Boolean function simplification. Timer circuits. Logic gate monostable and astable. Timer circuits with specific ICs. Number systems. Conversion. Binary, octal, hexadecimal. Binary codes, characteristics, types. Numeric codes. BCD codes. Alphanumeric codes. Other codes. Binary arithmetic. Addition. Signed binary numbers. Subtraction. Multiplication. Division. Other operations. Logic families. General characteristics of a logic family. TTL family, structure, characteristics, subfamilies. CMOS family, structure, characteristics, subfamilies. BiCmos. Combinatorial systems. Encoder. Code converters. Multiplexor. Decoder. Demultiplexor. Analogue multiplexors/demultiplexors. Transmission gates. Comparator. Parity generator/checker. Adder. Other arithmetic circuits. Manufacturer characteristics. Applications. Sequential systems. Bistable, types, classifications, structure. State machines, design. Synchronous and asynchronous circuits. Counters. Registers. Manufacturer characteristics. Memories. Description. Types and classifications. Memory mapping.

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
70			20					

Assessment System

General criteria

Clarification regarding assessment

Bibliography

Basic Bibliography

- MUÑOZ MERINO, E. Circuitos electrónicos digitales III. Dto. de Publicaciones ETSI Telecomunicaciones. Madrid.
- MUÑOZ MERINO, E. Circuitos electrónicos digitales IV. Dto. de Publicaciones ETSI Telecomunicaciones. Madrid.
- MAZO QUINTAS, M. Circuitos electrónicos digitales. Servicio de Publicaciones Universidad de Alcalá de Henares. Madrid.

In-depth Bibliography

- Mandado Pérez, Enrique. Sistemas electrónicos digitales. Marcombo. Barcelona.
- Hayes, John Patrick. Introducción al diseño lógico digital. Addison-Wesley. Iberoamericana. Buenos Aires
- HOLDWORDH. Diseño de lógica digital. Editorial Gustavo Gili, S.A. Barcelona.
- ALCUBILLA GONZALEZ, R. Diseño digital. Una perspectiva VLSI-CMOS. Ediciones UPC. Barcelona.

Websites

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