

## SUBJECT TEACHING GUIDE

### 310 - Impact of emerging technologies on computers

#### Master's Degree in computing engineering

Academic year 2023-2024

1. IDENTIFYING DATA					
Degree	Master's Degree in computing engineering			Type and Year	Optional. Year 2
Faculty	Faculty of Sciences				
Discipline	Optional Subjects				
Course unit title and code	310 - Impact of emerging technologies on computers				
Number of ECTS credits allocated	3	Term	Semester based (1)		
Web					
Language of instruction	Spanish	English Friendly	No	Mode of delivery	Face-to-face

Department	DPTO. INGENIERÍA INFORMÁTICA Y ELECTRÓNICA				
Name of lecturer	PABLO ABAD FIDALGO				
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Office	Facultad de Ciencias. Planta: + 1. DESPACHO PROFESOR (1107)				
Other lecturers					

### 3.1 LEARNING OUTCOMES

- Understand the relevance of emerging technologies on Computer systems
- Understand current limitations of CPU and Memory fabrication processes

### 4. OBJECTIVES

- Understand current limitations faced by computer architectures to keep on increasing performance
- Acquire basic knowledge about some emerging technologies that start being present in computer systems
- Understand how new technologies can affect computer evolution

## 6. COURSE ORGANIZATION

### CONTENTS

1	Introduction. Future evolution of Moore's Law. Current challenges of Computer Architecture: Integration density, Power Wall, Emerging applications
2	Vertical scaling. TSVs, 2.5D Stacking, Silicon Interposers, 3D Stacking. Current status and future evolution
3	Non-volatile memory technologies. Limitations of current technologies (SRAM, DRAM). Emerging technologies, STT-RAM, PCM, CBRAM. Basic aspects, advantages, limitations.
4	Emerging technologies in commercial products, some examples. intel 3D Xpoints, 2.5D stacked memory.

## 7. ASSESSMENT METHODS AND CRITERIA

Description	Type	Final Eval.	Reassessn	%
partial exam	Work	No	Yes	30,00
partial exam	Work	No	Yes	30,00
Final Exam	Written exam	Yes	Yes	40,00
TOTAL				100,00
Observations				
If a calification over 7 is obtained in partial exams, the final exam is not necessary to pass the course.				
Observations for part-time students				
Same kind of evaluation				

## 8. BIBLIOGRAPHY AND TEACHING MATERIALS

### BASIC

Título : Microprocessor Architecture: From Simple Pipelines to Chip Multiprocessors  
 Autor : Jean-Loup Baer,  
 Editor: Cambridge University Press; 1 edition (December 7, 2009)  
 ISBN : 0521769922