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