SUBJECT TEACHING GUIDE

M1689 - Systems, virtualization and safety

Master's Degree in computing engineering

Academic year 2018-2019

1. IDENTIFYING DATA					
Degree	Master's Degree in computing engineering			Type and Year	Compulsory. Year 1
Faculty	Faculty of Sciences				
Discipline	COMPUTER ENGINEERING				
Course unit title and code	M1689 - Systems, virtualization and safety				
Number of ECTS credits allocated	6	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	VALENTIN PUENTE VARONA
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Other lecturers	

3.1 LEARNING OUTCOMES
- - Be able to evaluate and improve the performance of computer systems based on system level virtualization
- - Being able to deploy virtualization based computer systems
- - Being able to move IaaS infrastructure support

4. OBJECTIVES

The course focuses on providing students with the fundamental tools for compression and management system level virtualization as a key to the deployment of cloud computing element.

Aspects related to the analysis and optimization of performance, security and isolation in virtualized systems based on GNU Linux with x86 hardware platforms will be deepened.

6. COURSE ORGANIZATION

CONTENTS	
1	Unit 1 Introduction. Elements of cloud computing: SaaS, PaaS and IaaS. Environments for deploying IaaS. Virtualization as key element for the optimization of resources, energy and security.
2	Unit 2: Performance analysis in complex applications: Deploying applications on PaaS, running natively. Analysis and optimization of performance transactional systems based on dynamic monitoring. Performance optimization.
3	Unit 3. System level virtualization. Virtualization resources: CPU, memory and I / O. Performance penalty of Virtualization: acceleration techniques.
4	Unit 4: Accelerating Virtual Machines: Overheads Minimization by hardware: x86 case. Accelerated CPU virtualization (VT-X, AMD-v), memory (EPT, NPT) and I / O (IOMMU, VT-d).
5	Unit 5: Management of domains, types of virtualization and performance optimization in systems with hardware acceleration with Xen virtualization layer.
6	Unit 6 Containers and deployment of applications in public clouds
7	Final exam

7. ASSESSMENT METHODS AND CRITERIA

Description	Type	Final Eval.	Reassessn	%
Technical works	Work	No	Yes	50,00
Global evaluation	Written exam	No	Yes	50,00
TOTAL				100,00

Observations

'There is a unique annual call. If the subject is not exceeds ordinary evaluation activities undertaken in the first quarter or the second will be accessible to recovery call in September.

If the quota of 'Matriculas de honor' of the course is completed in ordinary evaluation, students in the September call can't opt for one of them'

Observations for part-time students

Students enrolled part-time by the same method of assessment shall be governed students enrolled full-time.

8. BIBLIOGRAPHY AND TEACHING MATERIALS

BASIC

Virtual Machines: Versatile Platforms for Systems and Processes Authors: James Edward Smith, Ravi Nair
ISBN-10: 1558609105
ISBN-13: 978-1558609105