

340382 - ADSO-I5001 - Operating Systems Administration

Coordinating unit:	340 - EPSEVG - Vilanova i la Geltrú School of Engineering
Teaching unit:	701 - AC - Department of Computer Architecture
Academic year:	2019
Degree:	BACHELOR'S DEGREE IN INFORMATICS ENGINEERING (Syllabus 2018). (Teaching unit Compulsory) BACHELOR'S DEGREE IN INFORMATICS ENGINEERING (Syllabus 2010). (Teaching unit Compulsory)
ECTS credits:	6
Teaching languages:	Catalan, Spanish

Teaching staff

Coordinator: Sergi Sánchez López

Prior skills

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Requirements

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Degree competences to which the subject contributes

Specific:

3. CETI2. Ability to select, design, develop, integrate, value, construct, manage, exploit and maintain technologies of machines, programming and nets, keeping suitable costs and quality parameters.
4. CETI3. Ability to set up methodologies focused on user and development organization, valuation and application management and systems based on information technologies which secure ergonomic accessibility and use of
5. CETI5. Ability to select, to develop, integrate and manage information systems which satisfy organization necessities with identified costs and quality criteria.

Transversal:

1. EFFICIENT ORAL AND WRITTEN COMMUNICATION - Level 1. Planning oral communication, answering questions properly and writing straightforward texts that are spelt correctly and are grammatically coherent.
2. EFFECTIVE USE OF INFORMATION RESOURCES - Level 1. Identifying information needs. Using collections, premises and services that are available for designing and executing simple searches that are suited to the topic.

Teaching methodology

Classes will be held using the means available in the classroom (blackboard, multimedia equipment) and those provided by the students themselves (laptop) and will be based on the learning project. The class will be organized in teams of 5-6 students who, applying agile methodologies, develop a project throughout the course. The objectives of this project will be directly related with the contents of the subject. To work as a team, class attendance is COMPULSORY. A portion of the mark will be the defense, by each team, the objectives achieved at each moment, and teamwork. The other part of the mark will be based on the realization of individual exam, partial and final.

Learning objectives of the subject

1. Knowledge about the system administrator, with his/her responsibilities and tasks.
2. Plan the basic installation of the systems in an organization.
3. Learn to prepare an installation of the operating system, perform the installation, and the post-installation.
6. Learn to install, maintain, and manage applications for the organization.

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4. Manage user accounts, add users, modify users, get information on users, deactivate users, and remove users.
5. Use and modify the permissions and protection mechanisms offered by the operating systems on devices and files.
7. Learn to monitor the operating system, users, resources, and applications.
8. Learn to maintain the resources and the file system in a good condition, and to perform backups.
9. Manage the system services, and periodic tasks
10. Learn to configure the main Internet services.
11. Configure, verify and maintain the security of the installation.

Study load

Total learning time: 150h	Hours large group:	45h	30.00%
	Hours medium group:	0h	0.00%
	Hours small group:	15h	10.00%
	Guided activities:	0h	0.00%
	Self study:	90h	60.00%

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Content

<p>Presentation</p>	<p>Learning time: 1h Theory classes: 1h</p>
<p>Description:</p> <ul style="list-style-type: none"> 0.1 Information ADSO 0.2 teachers 0.3 Course objectives 0.4 Teaching methods 0.5 evaluation 0.6 Agenda 0.7 Planning of the semester 	
<p>Introduction</p>	<p>Learning time: 8h Theory classes: 1h Laboratory classes: 1h Self study : 6h</p>
<p>Description:</p> <ul style="list-style-type: none"> 1.1. definitions 1.2 Parts Operating System 1.3 System Administrator Tasks 1.4 Skill level 1.5 Administrator ethical code 	

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<p>Installation of the operating system</p>	<p>Learning time: 17h Theory classes: 2h Practical classes: 6h Laboratory classes: 1h Self study : 8h</p>
<p>Description:</p> <ul style="list-style-type: none"> 2.1 Lifecycle of a system 2.2 Prerequisite Tasks: information and planning 2.3 Physical Structure of a disc 2.4 Partitions: concept and justification 2.5 Structure of the file system (UNIX and Windows) 2.6 swap area 2.7 Creating the filesystem 2.8 System Load 2.9 Basic System Configuration 2.10 Starting the system 2.11 System Shutdown <p>Related activities:</p> <ul style="list-style-type: none"> Activity 1: Problems installing an operating system Lab: Installing an operating system 	
<p>User Management</p>	<p>Learning time: 16h Theory classes: 1h Practical classes: 4h Laboratory classes: 1h Guided activities: 2h Self study : 8h</p>
<p>Description:</p> <ul style="list-style-type: none"> 3.1 The user as a protection domain 3.2 System Databases 3.3 Basic Commands 3.4 Deactivating and deleting users 3.5 Users and Processes 3.6 permissions and protections 3.7 Users and special groups 3.8 User Management Policies <p>Related activities:</p> <ul style="list-style-type: none"> Activity 1: user management exercices Activity 2: User Management Laboratory Activity 3: complementary Work about user management 	

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<p>Application Management</p>	<p>Learning time: 12h Theory classes: 1h Practical classes: 2h Laboratory classes: 1h Self study : 8h</p>
<p>Description: 4.1 Installing applications 4.2 Versioning 4.3 Installing from source code</p> <p>Related activities: Activity 1: Application Management Exercises Activity 2: Application management Laboratory Activity 3: scripts Programming Laboratory</p>	
<p>Monitoring</p>	<p>Learning time: 10h Theory classes: 1h Laboratory classes: 1h Self study : 8h</p>
<p>Description: 5.1 Objectives 5.2 Justification 5.3 Components for monitoring 5.3.1 CPU 5.3.2 Memory 5.3.3 Disk 5.3.4 Network 5.3.5 Users 5.4 Processes 5.4.1 Process Management 5.4.2 Communication between processes</p> <p>Related activities: Activity 1: system monitoring exercises</p>	

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<p>File System Maintenance</p>	<p>Learning time: 17h Theory classes: 2h Practical classes: 4h Laboratory classes: 1h Guided activities: 2h Self study : 8h</p>
<p>Description: 6.1 Internal organization filesystem 6.2 Owners and protections 6.3 File System Integrity 6.4 Backups</p> <p>Related activities: Activity 1: filesystem Exercises Activity 2: Laboratory of timing Activity 3: filesystem complementary work</p>	
<p>Local Services management</p>	<p>Learning time: 10h Theory classes: 1h Laboratory classes: 1h Self study : 8h</p>
<p>Description: 7.1 Objectives 7.2 Task Timing 7.3 Print Services</p> <p>Related activities: Activity 1: Local services lab</p>	

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<p>Network services management</p>	<p>Learning time: 10h Theory classes: 1h Practical classes: 2h Laboratory classes: 1h Self study : 6h</p>
<p>Description: 10.1 Transportation 10.2 Protocols 10.3. Networks and hosts 10.4 Address Management 10.5 ports 10.6 Firewalls 10.7 Server and Superserver 10.8 RPC 10.9 DNS, DHCP, HTTP, FTP, SMTP, POP, IMAP, SSH, NFS, SMB, LDAP, VPN</p> <p>Related activities: Activity 1: Network services exercises Activity 2: DNS lab</p>	
<p>Protction and Security</p>	<p>Learning time: 14h Theory classes: 1h Practical classes: 4h Laboratory classes: 1h Self study : 8h</p>
<p>Description: 11.1. goals 11.2. definition 11.3. Default security 11.4. Security and Usability 11.5. Safety Components 11.6. physical security 11.7. Local Security 11.8. Network Security</p> <p>Related activities: Activity 1: protection and security exercises Activity 2: backup lab</p>	

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<p>Virtualitation</p>	<p>Learning time: 13h Theory classes: 1h Practical classes: 2h Laboratory classes: 2h Self study : 8h</p>
<p>Description: 9.1. Habits and customs 9.2. Emulation and simulation 9.3. Virtualization and operating system 9.4. Xen 9.5. kvm</p> <p>Related activities: Activity 1: virtualization exercises Activity 2: virtualization lab</p>	

Qualification system

mid-term exam*0,3 + project*0,3+ Final exam*0,4+ tests*0,1 >= 5

Revaluation: exam

Regulations for carrying out activities

To obtain the project mark and tests, the class attendance is compulsory

Bibliography

Basic:

Adelstein, Tom. Linux system administration. Farnham: O'Reilly, 2007. ISBN 9780596009526.

Nemeth, Evi [et al.]. UNIX and Linux system administration handbook. 4th ed. Upper Saddle River, NJ: Prentice Hall, 2010. ISBN 9780131480056.

Complementary:

Siever, Ellen [et al]. Linux in a nutshell : a desktop quick reference. 6th ed. Cambridge: O'Reilly, 2009. ISBN 9780596154486.