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 indentified 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

The medium-size Group classes are conducted using the means available on the blackboard, multimedia equipment classrooms and are based on the oral presentation by the teacher about the contents of the subject under study (expository method). In some cases, lectures based on the participation and involvement of students through small activities in the classroom as direct questions, student exhibitions on specific topics or resolving problems associated with the theoretical approach.

Small group classes will be:

- Laboratory classes: will be held in the computer rooms of the centre. The student will need to bring a preliminary report prepared practice (read and understand the statement from a script previously be in the digital campus). Then they will work on the computer and deliver a final report with the results. Practices are individual.

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.

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

<table>
<thead>
<tr>
<th>Total learning time: 150h</th>
<th>Hours large group: 45h</th>
<th>30.00%</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Hours medium group: 0h</td>
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<tr>
<td></td>
<td>Hours small group: 15h</td>
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<tr>
<td></td>
<td>Guided activities: 0h</td>
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<tr>
<td></td>
<td>Self study: 90h</td>
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## 340382 - ADSO-I5001 - Operating Systems Administration

### Content

<table>
<thead>
<tr>
<th>Presentation</th>
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<tbody>
<tr>
<td><strong>Description:</strong></td>
<td>Theory classes: 1h</td>
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<tr>
<td>0.1 Information ADSO</td>
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<tr>
<td>0.2 teachers</td>
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<tr>
<td>0.3 Course objectives</td>
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<td>0.4 Teaching methods</td>
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<td>0.5 evaluation</td>
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<tr>
<td>0.6 Agenda</td>
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<td>0.7 Planning of the semester</td>
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<thead>
<tr>
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<tbody>
<tr>
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<td>1.1 definitions</td>
<td>Laboratory classes: 1h</td>
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<tr>
<td>1.2 Parts Operating System</td>
<td>Self study: 6h</td>
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<tr>
<td>1.3 System Administrator Tasks</td>
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<td>1.4 Skill level</td>
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<tr>
<td>1.5 Administrator ethical code</td>
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</tbody>
</table>
## Installation of the operating system

### Description:
- Lifecycle of a system
- Prerequisite Tasks: information and planning
- Physical Structure of a disc
- Partitions: concept and justification
- Structure of the file system (UNIX and Windows)
- Swap area
- Creating the filesystem
- System Load
- Basic System Configuration
- Starting the system
- System Shutdown

### Related activities:
- Activity 1: Problems installing an operating system
- Lab: Installing an operating system

### Learning time: 17h
- Theory classes: 2h
- Practical classes: 6h
- Laboratory classes: 1h
- Self study: 8h

## User Management

### Description:
- The user as a protection domain
- System Databases
- Basic Commands
- Deactivating and deleting users
- Users and Processes
- Permissions and protections
- Users and special groups
- User Management Policies

### Related activities:
- Activity 1: user management exercises
- Activity 2: User Management Laboratory
- Activity 3: complementary Work about user management

### Learning time: 16h
- Theory classes: 1h
- Practical classes: 4h
- Laboratory classes: 1h
- Guided activities: 1h
- Self study: 8h
### Application Management

**Description:**
- 4.1 Installing applications
- 4.2 Versioning
- 4.3 Installing from source code

**Related activities:**
- Activity 1: Application Management Exercises
- Activity 2: Application management Laboratory
- Activity 3: scripts Programming Laboratory

<table>
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<tr>
<td>Laboratory classes: 1h</td>
</tr>
<tr>
<td>Self study : 8h</td>
</tr>
</tbody>
</table>

### Monitoring

**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

**Related activities:**
- Activity 1: system monitoring exercises

<table>
<thead>
<tr>
<th>Learning time: 10h</th>
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<tbody>
<tr>
<td>Theory classes: 1h</td>
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<tr>
<td>Self study : 8h</td>
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</table>
### File System Maintenance

**Learning time:** 17h  
Theory classes: 2h  
Practical classes: 4h  
Laboratory classes: 1h  
Guided activities: 2h  
Self study: 8h

**Description:**  
6.1 Internal organization filesystem  
6.2 Owners and protections  
6.3 File System Integrity  
6.4 Backups  

**Related activities:**  
Activity 1: filesystem Exercises  
Activity 2: Laboratory of timing  
Activity 3: filesystem complementary work

### Local Services management

**Learning time:** 10h  
Theory classes: 1h  
Laboratory classes: 1h  
Self study: 8h

**Description:**  
7.1 Objectives  
7.2 Task Timing  
7.3 Print Services  

**Related activities:**  
Activity 1: Local services lab
### Network services management

<table>
<thead>
<tr>
<th>Learning time: 10h</th>
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<tbody>
<tr>
<td>Theory classes: 1h</td>
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</tr>
<tr>
<td>Laboratory classes: 1h</td>
</tr>
<tr>
<td>Self study: 6h</td>
</tr>
</tbody>
</table>

#### 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

#### Related activities:
- Activity 1: Network services exercises
- Activity 2: DNS lab

### Protection and Security

<table>
<thead>
<tr>
<th>Learning time: 14h</th>
</tr>
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<tbody>
<tr>
<td>Theory classes: 1h</td>
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</tr>
<tr>
<td>Laboratory classes: 1h</td>
</tr>
<tr>
<td>Self study: 8h</td>
</tr>
</tbody>
</table>

#### 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

#### Related activities:
- Activity 1: protection and security exercises
- Activity 2: backup lab
### Virtualization

**Description:**
- 9.1. Habits and customs
- 9.2. Emulation and simulation
- 9.3. Virtualization and operating system
- 9.4. Xen
- 9.5. kvm

**Related activities:**
- Activity 1: virtualization exercises
- Activity 2: virtualization lab

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### Qualification system

mid-term exam*0,3 + Laboratory*0,2 + Final exam*0,5 >= 5

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### Bibliography

**Basic:**

**Complementary:**