

## 340377 - SIOP-I4001 - Operating Systems

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, English

### Teaching staff

Coordinator:	García Almiñana, Jordi
Others:	Sanchez Lopez, Sergio

### Prior skills

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### Requirements

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### Degree competences to which the subject contributes

Specific:

1. CEFB6. Adequate knowledge of the concept of business, institutional and legal framework of company. Organization and Management.
2. CEFC1. Ability to design, develop, select and value applications and informatic systems affirming its reliability, security and quality corresponding to ethical principals and legislation and current rules.
3. CEFC10. Knowledge of characteristics, functions and structure of operating systems and of designing and implementing applications based on their services.
4. CEFC5. Knowledge, management and maintenance of systems, computing services and applications.
5. CEFC9. Ability to know, understand and assess computer structure and architecture, as well as basic components forming them.

### Teaching methodology

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### Learning objectives of the subject

Know the main functions of an OS and because of its necessity (abstraction / virtualització hardware, security, efficiency) Understanding how the OS manages and provides its services and capabilities internally through data representation and management of resources, algorithms and hardware support.

An overview of information systems: know the different interfaces and components that interact with the OS (hardware, system libraries, libraries + language user programs).

For each basic functionality of the system (process management, memory and I/O) know influencing basic aspects of the different architectures and environments that can support operating systems.

For each basic functionality of the system (process management, memory and I/O): Understanding the hardware element that we want virtualizing

For each basic functionality of the system (process management, memory and I/O) know and be able to use the basic

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functionality offered by the system to the user.

For each basic functionality of the system (management processes, memory and I/O) know the basic elements of design (data types, data management structures and management algorithms) to offer this functionality.

For each basic functionality of the system (process management, memory and I/O):to know the basic architecture of the basic design elements in SO.

For each basic resource which manages the OS (processes, virtual memory and I/O):to know the basic metric to assess service system and be able to apply the theoretical level.

For each basic resource which manages the system (processes, memory, I/O), know and be able to use basic tools to analyze a system's implementation and to monitor the state of the system to detect potential problems.

Understanding the implications, from the viewpoint of system and user of a multi-user parallel system.

### 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>1. Introduction to Operating Systems</p>	<p>Learning time: 22h 12m            Theory classes: 2h            Practical classes: 4h            Laboratory classes: 2h            Guided activities: 3h            Self study : 11h 12m</p>
<p>2. Management of input / output</p>	<p>Learning time: 28h 48m            Theory classes: 3h            Practical classes: 6h            Laboratory classes: 3h            Self study : 16h 48m</p>
<p>3. File System</p>	<p>Learning time: 9h 48m            Theory classes: 1h            Practical classes: 2h            Laboratory classes: 1h            Self study : 5h 48m</p>
<p>4. Process Management</p>	<p>Learning time: 28h 48m            Theory classes: 3h            Practical classes: 6h            Laboratory classes: 3h            Self study : 16h 48m</p>
<p>5. Process Coordination</p>	<p>Learning time: 19h 12m            Theory classes: 2h            Practical classes: 4h            Laboratory classes: 2h            Self study : 11h 12m</p>

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<p>6. Threads</p>	<p>Learning time: 19h 12m Theory classes: 2h Practical classes: 4h Laboratory classes: 2h Self study : 11h 12m</p>
<p>7. Memory management</p>	<p>Learning time: 9h 36m Theory classes: 1h Practical classes: 2h Laboratory classes: 1h Self study : 5h 36m</p>

### Qualification system

20% LAB + 20% PRO + max( 20% EXP + 40% EXF, 60% EXF )

LAB: Laboratory

PRO: Problems and class participation

EXP: Mid term exam

EXF: Last term exam

### Regulations for carrying out activities

### Bibliography