Degree competences to which the subject contributes

Specific:
1. Manage activities with relevant content of projects and/or operations in the technology and the organization must interact effectively and efficiently.
2. Identify, analyze, diagnose, design and implement solutions in complex socio-technical systems.
3. Planning, organizing, implementing, leading and controlling engineering projects, especially projects of innovation (R + D + i) and process improvement.
5. Apply theories and principles relating to technology and information systems in order to analyze complex situations and uncertainty, and make decisions using engineering tools.

Generic:
4. Acquire skills related to the design and management of complex organizations, including people management, financial aspects, production, project management, and allocation and distribution of resources for managers and management problems.
6. Acquire skills related to the design and management of complex organizations, including people management, financial aspects, production, project management, and allocation and distribution of resources for managers and management problems.
7. Know and understand the organization of a company and the sciences that define their activity, ability to understand business rules and relationships between planning, industrial and commercial strategies, quality and profit.

Teaching methodology

Lectures with active participation of students, where the teacher presents the theoretical and practical aspects of the subject.
Practical classes where students solve problems and assumptions, both individually and in groups, and teacher presents examples and answers questions.
Case method, where students, with teacher support, analyse the management and information systems applications in specific organizations, describe and assess the issues involved and the results obtained.

Learning objectives of the subject

At the end of the course students should be able to describe the environment of information systems (IS) as well as related information and communication technologies (ICT), and appreciate why information resources have to be managed in organizations. It should be described the knowledge and basic skills of discipline, using methodologies and
proprietary tools, and learning to learn in the context of matter.

## Study load

<table>
<thead>
<tr>
<th>Total learning time: 150h</th>
<th>Hours medium group: 27h 18.00%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Hours small group: 27h 18.00%</td>
</tr>
<tr>
<td></td>
<td>Self study: 96h 64.00%</td>
</tr>
</tbody>
</table>
# 240EO035 - Information Systems

## Content

<table>
<thead>
<tr>
<th>1. Introduction to information systems</th>
<th>Learning time: 19h</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Description:</strong></td>
<td>Theory classes: 6h</td>
</tr>
<tr>
<td>Concept of information system (IS) and its function. Information needs in organizations and the role of information system. Interaction between the information system and the organization. Categories of information systems. The information and communication technology (ICT). Impact of information systems and ICT in organizations. ICT and society.</td>
<td>Practical classes: 3h</td>
</tr>
<tr>
<td><strong>Related activities:</strong></td>
<td>Self study: 10h</td>
</tr>
<tr>
<td>Activity 1, 5, 6 and 7.</td>
<td></td>
</tr>
<tr>
<td><strong>Specific objectives:</strong></td>
<td></td>
</tr>
<tr>
<td>To describe the meaning of information system in the organisation.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2. Applications of information systems and technologies</th>
<th>Learning time: 30h</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Description:</strong></td>
<td>Theory classes: 4h</td>
</tr>
<tr>
<td><strong>Related activities:</strong></td>
<td>Self study: 20h</td>
</tr>
<tr>
<td>Activity 1, 5, 6 and 7.</td>
<td></td>
</tr>
<tr>
<td><strong>Specific objectives:</strong></td>
<td></td>
</tr>
<tr>
<td>To identify applications and technological solutions in organizations.</td>
<td></td>
</tr>
</tbody>
</table>
### 3. Strategic management for information systems and technologies

**Learning time:** 38h  
Theory classes: 9h  
Practical classes: 9h  
Self study: 20h

**Description:**
Strategy and ICT governance. The planning of IS and ICT. Evolution of the use of ICT and IS planning. Strategic alignment of IS and ICT. Use of IS and ICT as a strategic resource. Organizational implications of the introduction of IS and ICT.

**Related activities:**
Activity 2, 3, 5 and 7.

**Specific objectives:**
To identify and describe information needs, and to manage IS and ICT at a strategic level.

### 4. Development and management of information systems

**Learning time:** 24h  
Theory classes: 6h  
Practical classes: 6h  
Self study: 12h

**Description:**

**Related activities:**
Activity 4, 5 and 7.

**Specific objectives:**
To identify and describe information needs, strategies and methods to developing and managing IS and ICT.

### 5. Evaluation of information systems investments

**Learning time:** 30h  
Theory classes: 5h  
Practical classes: 5h  
Self study: 20h

**Description:**

**Related activities:**
Activity 4, 5 and 7.

**Specific objectives:**
To evaluate the feasibility of IS and ICT projects.
Planning of activities

**ACTIVITY 1. USING ICT AND IS IN ORGANISATIONS**

**Description:**
Analysis of three cases of organizations to see how they use IS and ICT. Identifying technologies, their application to the development of information systems, the design of the processes and the impact on the organization.

**Support materials:**
Description of cases and objectives, along with a guide of the activities to be performed and the slides of the course.

**Descriptions of the assignments due and their relation to the assessment:**
Individually written report, together with the resolution of questions raised during the sessions, in which cases are discussed.

**Specific objectives:**
To identify the role of IS in the organisation, and the implications that IS and ICT have.

**ACTIVITY 2. ICT OUTSOURCING**

**Hours:** 6h
Laboratory classes: 3h
Self study: 3h

**Description:**
Analysis of a company that has outsourced all or part of the ICT area to determine: the outsourcing model between the company and the supplier, the service quality indicators and constraints.

**Support materials:**
Description of cases, sheet with the description of the objectives, and a guide of things to do and the transparencies of the subject.

**Descriptions of the assignments due and their relation to the assessment:**
Individual report with the result of the analysis.

**Specific objectives:**
To describe the practices of ICT outsourcing by firms.

**ACTIVITY 3. IS/ICT STRATEGIC PLANNING**

**Hours:** 18h
Laboratory classes: 6h
Self study: 12h

**Description:**
Application of a procedure for strategic planning of IS and ICT in a company, to prepare a plan for the strategic development of information technology and systems.

**Support materials:**
Description of a case study with the guidance of the activities to be performed and the slides of the course.

**Descriptions of the assignments due and their relation to the assessment:**
Reports at the group level with the proposed solution.
### ACTIVITY 4. PROJECT DEVELOPMENT AND FEASIBILITY STUDY.

**Hours:** 15h  
Laboratory classes: 5h  
Self study: 10h

**Description:**  
To perform two exercises on systems development, calculating return on investment and total cost of ownership for ICT solutions in an enterprise. It should be proposed a software solution from a particular provider and justify the choice.

**Support materials:**  
Description of the exercises and objectives, as well as guides to conduct activities and course slides.

**Descriptions of the assignments due and their relation to the assessment:**  
Individual or group report, as indicated, with the proposed solution and results.

**Specific objectives:**  
To describe the process of IS development and management as well as to determine the value of an IS solution for a company.

### ACTIVITY 5. ANALYSIS OF AN ICT APPLICATION.

**Hours:** 29h  
Laboratory classes: 4h  
Self study: 25h

**Description:**  
Work done during the entire course consisting of a description and analysis of an innovative application of information technology and electronic communication in a particular case, describing the processes, technologies and the impact on the company.

**Support materials:**  
Description of the objectives and the guidelines of the activities to be performed as well as the slides of the course are used.

**Descriptions of the assignments due and their relation to the assessment:**  
Written report, together with an exhibition and defence, of the case resolution on the part of the group.

**Specific objectives:**  
To apply concepts developed during the academic period, in a practical, real case, of the nearby environment.

### ACTIVITY 6. MID-TERM EXAM

**Hours:** 10h  
Laboratory classes: 1h  
Self study: 9h

**Description:**  
Individual test and in writing on the contents of the topics 1 and 2.

**Support materials:**  
Written text of the final test questions
ACTIVITY 7. FINAL EXAM

<table>
<thead>
<tr>
<th>Description:</th>
<th>Hours: 24h</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual test and in writing on the whole matter treated in the subject.</td>
<td>Laboratory classes: 2h</td>
</tr>
<tr>
<td></td>
<td>Self study: 22h</td>
</tr>
</tbody>
</table>

Support materials:
Written text of the final test questions.

Specific objectives:
To value the degree that has been reached the assimilation of the concepts, principles and basic foundations, as well as the methods related to the topics treated in the subject.

Qualification system

The final mark is the weighted sum of:
N\text{final} = 0.6 \text{Nef} + 0.2 \text{Npb} + 0.1 \text{Ntc} + 0.1 \text{Npr}

There is a partial test set, for items 1 and 2, under the following conditions: If Npp is greater than Nef, then Npp will be considered according to its weight.

The final mark including re-evaluation the weighted sum of:
N\text{final} = 0.6 \text{Ner} + 0.2 \text{Npb} + 0.1 \text{Ntc} + 0.1 \text{Npr}

N\text{final}: Final mark
N\text{ef}: Final exam mark
N\text{pp}: Mid-term exam mark
N\text{tc}: Activity 5 report mark
N\text{pb}: Exercices mark
N\text{pr}: Exhibition mark
N\text{er}: Re-evaluation mark

The final examination consists of a test with questions that have multiple response options, but only one valid, plus two exercises and / or essay questions. The approximate duration is two hours.

Regulations for carrying out activities

It is not admitted any reference materials during examinations. Examination tests are conducted in accordance with the timetable provided by the Centre.
Bibliography

Basic:


Complementary:


Others resources:

Lectures slides.
Description of case studies, exercises and guides.