300047 - IOT - Telecommunications Infrastructure and Operation

Coordinating unit: 300 - EETAC - Castelldefels School of Telecommunications and Aerospace Engineering
Teaching unit: 744 - ENTEL - Department of Network Engineering
732 - OE - Department of Management

Academic year: 2018
Degree: BACHELOR’S DEGREE IN AEROSPACE SYSTEMS ENGINEERING/BACHELOR’S DEGREE IN NETWORK ENGINEERING (Syllabus 2015). (Teaching unit Compulsory)
BACHELOR’S DEGREE IN NETWORK ENGINEERING (Syllabus 2009). (Teaching unit Compulsory)
ECTS credits: 6

Teaching languages: Catalan, Spanish, English

Teaching staff
Coordinator: Definit a la infoweb de l’assignatura.
Others: Definit a la infoweb de l’assignatura.

Prior skills
Know the basic concepts about business and management learn in the course Empresa, Telecomunicacions i Sostenibilitat (semester 1A). Know the basic concepts of networks, applications and telematic and telecom services learnt up to semester 3A (included). It is VERY IMPORTANT for the student to have taken and completed the MXS, SAI and XLAM courses BEFORE enrolling in IOT.

Requirements
Corequisite:
- PLANIFICACIÓ DE XARXES
- XARXES DE TRANSPORT
- XARXES LOCALS, D'ACCÉS I METROPOLITANES

Degree competences to which the subject contributes

Specific:
1. CE 11 TELECOM. Capacidad de concebir, desplegar, organizar y gestionar redes, sistemas, servicios e infraestructuras de telecomunicación, en contextos residenciales (hogar, ciudad y comunidades digitales), empresariales o institucionales responsabilizándose de su puesta en marcha y mejora continua, así como conocer su impacto económico y social. (CIN/352/2009, BOE 20.2.2009.)
2. CE 20 TELECOM. Conocimiento de la normativa y la regulación de las telecomunicaciones en los ámbitos nacional, europeo e internacional. (CIN/352/2009, BOE 20.2.2009.)
3. CE 8 TELECOM. Capacidad para utilizar herramientas informáticas de búsqueda de recursos bibliográficos o de información relacionada con las telecomunicaciones y la electrónica. (CIN/352/2009, BOE 20.2.2009.)

Generic:
11. PROJECT MANAGEMENT - Level 2: Define the objectives of a well-defined, narrow scope, and plan development, identifying resources, tasks, shared responsibilities and integration. Use appropriate tools to support project management.

Transversal:
4. ENTREPRENEURSHIP AND INNOVATION: Knowing about and understanding how businesses are run and the sciences that govern their activity. Having the ability to understand labor laws and how planning, industrial and marketing strategies, quality and profits relate to each other.
5. SUSTAINABILITY AND SOCIAL COMMITMENT - Level 1. Analyzing the world’s situation critically and systemically, while taking an interdisciplinary approach to sustainability and adhering to the principles of sustainable human
At the end of the course, the student should be able to:

- Determine, based on concepts, issues to consider from the generation of an idea to the provision of a service step by step, by a new or an existing company, making money with this.
- Explain the meaning of the innovation process, release process for telecommunications services, telecommunications market, the market of information technologies, telecommunications policy in Europe and the General Telecommunications Law, LOPD, LSSI (Spanish laws), business models, business plans, ROI, TMN, SNMP, network monitoring, troubleshooting, networking, RMON.
- Identify the factors that enable the successful launch of a new telecommunications service or a new business sector, or a new application that uses telecommunications networks, that critically depends on the acceptance by the market which is focused.
- Identify the factors that enable the provision of a telecommunications service, depending on highly dynamic technological aspects of legal and regulatory issues.
- Using the tools of project management (PERT, CPM) and project-based management, estimate demand, pricing and quotes.
- Using the acquired knowledge in the technological, marketing, regulatory and legal to launch and operate a new telecommunications service.

### Teaching methodology

The lectures will be explanatory, with high participation by the student as it will be requested his/her opinion on current issues relating to the content. In the activities, groups of students will be supervised by the teacher in important decision-making, and then ask the status of the ongoing activity.

### Learning objectives of the subject

At the end of the course, the student should be able to:

- Determine, based on concepts, issues to consider from the generation of an idea to the provision of a service step by step, by a new or an existing company, making money with this.
- Explain the meaning of the innovation process, release process for telecommunications services, telecommunications market, the market of information technologies, telecommunications policy in Europe and the General Telecommunications Law, LOPD, LSSI (Spanish laws), business models, business plans, ROI, TMN, SNMP, network monitoring, troubleshooting, networking, RMON.
- Identify the factors that enable the successful launch of a new telecommunications service or a new business sector, or a new application that uses telecommunications networks, that critically depends on the acceptance by the market which is focused.
- Identify the factors that enable the provision of a telecommunications service, depending on highly dynamic technological aspects of legal and regulatory issues.
- Using the tools of project management (PERT, CPM) and project-based management, estimate demand, pricing and quotes.
- Using the acquired knowledge in the technological, marketing, regulatory and legal to launch and operate a new telecommunications service.

### Study load

<table>
<thead>
<tr>
<th>Total learning time: 150h</th>
<th>Hours large group: 43h</th>
<th>28.67%</th>
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</thead>
<tbody>
<tr>
<td>Hours medium group:</td>
<td>0h</td>
<td>0.00%</td>
</tr>
<tr>
<td>Hours small group:</td>
<td>0h</td>
<td>0.00%</td>
</tr>
<tr>
<td>Guided activities:</td>
<td>23h</td>
<td>15.33%</td>
</tr>
<tr>
<td>Self study:</td>
<td>84h</td>
<td>56.00%</td>
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</tbody>
</table>
### Content

| **Introduction** | **Learning time:** 29h  
| | Theory classes: 10h  
| | Self study: 19h  |

**Description:**
Acquisition of basic concepts in technological, marketing, legal and regulatory, to launch and operate a new telecommunications service

**Related activities:**
Title Activity 1: Control of theoretical concepts

| **Business Model** | **Learning time:** 35h  
| | Theory classes: 10h  
| | Guided activities: 5h  
| | Self study: 20h  |

**Description:**
In this module students will acquire concepts related to the business model, as estimate of demand, pricing, calculation and management costs, system costs, budgeting and budgetary control, quality management, and additionally, professionals profiles and allocation of tasks.

**Related activities:**
Development of a project, initial part

| **Project Management** | **Learning time:** 28h  
| | Theory classes: 8h  
| | Guided activities: 5h  
| | Self study: 15h  |

**Description:**
In this content, the different tools of Project Management: PERT and CPM, analysis of processes involved, using a process based management will be explained

**Related activities:**
Title Activity 2: Development of a project for the course, the initial part
### Operation and Network Management

<table>
<thead>
<tr>
<th>Description:</th>
<th>Learning time: 30h</th>
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</thead>
<tbody>
<tr>
<td>Description of the contents related to the operation and management of network such as network management architectures, network management platforms, communications networks, and its interfaces, performance monitoring, processes, security, disaster recovery.</td>
<td>Theory classes: 10h</td>
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<td></td>
<td>Self study: 20h</td>
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<tr>
<td>Related activities:</td>
<td></td>
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<tr>
<td>Final exam: operation and network management</td>
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</tbody>
</table>

### Deployment of an architecture for network monitoring and management

<table>
<thead>
<tr>
<th>Description:</th>
<th>Learning time: 28h</th>
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</thead>
<tbody>
<tr>
<td>Analysis, deployment and operation of an architecture for network monitoring and management, in the lab.</td>
<td>Theory classes: 5h</td>
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<td></td>
<td>Guided activities: 13h</td>
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<tr>
<td></td>
<td>Self study: 10h</td>
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<tr>
<td>Related activities:</td>
<td></td>
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<tr>
<td>Lab session: network monitoring and management.</td>
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### Qualification system

- 20% Mid-semester exam
- 25% Final exam
- 25% Development of a proposal of a telecommunications service
- 25% Lab session: network management and monitoring
- 15% Exercises, reports and tests
- 10% Participation and attitude

### Regulations for carrying out activities

The activities will be conducted in small groups of two or three students that will work on the topic given by the teacher.
Bibliography

Basic:


Complementary:


Others resources: