Course guide
300047 - IOT-M - Telecommunications Infrastructure and Operation

Unit in charge: Castelldefels School of Telecommunications and Aerospace Engineering
Teaching unit: 744 - ENTEL - Department of Network Engineering.
732 - OE - Department of Management.

Degree: BACHELOR’S DEGREE IN NETWORK ENGINEERING (Syllabus 2009). (Compulsory subject).

Academic year: 2022  ECTS Credits: 6.0  Languages: Catalan, Spanish, English

LECTURER

Coordinating lecturer: 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 learnt 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

Corequisit:
- 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.)

Generical:
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 development. Recognizing the social and environmental implications of a particular professional activity.
6. THIRD LANGUAGE. Learning a third language, preferably English, to a degree of oral and written fluency that fits in with the future needs of the graduates of each course.
7. EFFICIENT ORAL AND WRITTEN COMMUNICATION - Level 3. Communicating clearly and efficiently in oral and written presentations. Adapting to audiences and communication aims by using suitable strategies and means.
8. TEAMWORK - Level 1. Working in a team and making positive contributions once the aims and group and individual responsibilities have been defined. Reaching joint decisions on the strategy to be followed.
9. EFFECTIVE USE OF INFORMATION RESOURCES. Managing the acquisition, structure, analysis and display of information from the own field of specialization. Taking a critical stance with regard to the results obtained.
10. SELF-DIRECTED LEARNING. Detecting gaps in one’s knowledge and overcoming them through critical self-appraisal. Choosing the best path for broadening one’s knowledge.

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, General Data Protection Regulation (GDPR), LOPD, LSSI (Spanish laws), business models, business plans, ROI, TMN, ITIL, SNMP, network monitoring, troubleshooting, networking,
- 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>Type</th>
<th>Hours</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hours large group</td>
<td>43,0</td>
<td>28.67</td>
</tr>
<tr>
<td>Self study</td>
<td>84,0</td>
<td>56.00</td>
</tr>
<tr>
<td>Guided activities</td>
<td>23,0</td>
<td>15.33</td>
</tr>
</tbody>
</table>

Total learning time: 150 h
## CONTENTS

### Introduction

**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

**Full-or-part-time:** 29h  
Theory classes: 10h  
Self study: 19h

### Business Model

**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

**Full-or-part-time:** 35h  
Theory classes: 10h  
Guided activities: 5h  
Self study: 20h

### Project Management

**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

**Full-or-part-time:** 28h  
Theory classes: 8h  
Guided activities: 5h  
Self study: 15h

### Service network operation and Management

**Description:**
This content will explain the concepts related to the operation and management of network services, such as services management architectures, network management platforms, IT services, and their interfaces, performance monitoring, processes, security, disaster recovery

**Related activities:**
Exercises and quizzes on operation and management of services

**Full-or-part-time:** 30h  
Theory classes: 10h  
Self study: 20h
Deployment of an architecture for network monitoring and management

Description:
Analysis, deployment and operation of an architecture for network monitoring and management, in the lab.

Related activities:
Lab session: network monitoring and management.

Full-or-part-time: 28h
Theory classes: 5h
Guided activities: 13h
Self study: 10h

GRADING SYSTEM

20% Mid-semester exam
25% Final exam
25% Development of a proposal of a telecommunications service
15% Lab session: network management and monitoring
10% Exercises, reports and tests
5% Participation and attitude

EXAMINATION RULES.

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: