

## 30159 - Communication Networks and Services

### Información del Plan Docente

<b>Academic Year</b>	2016/17
<b>Academic center</b>	179 - Centro Universitario de la Defensa - Zaragoza
<b>Degree</b>	563 - Bachelor's Degree in Industrial Organisational Engineering 457 - Bachelor's Degree in Industrial Organisational Engineering
<b>ECTS</b>	6.0
<b>Course</b>	4
<b>Period</b>	First semester
<b>Subject Type</b>	Optional
<b>Module</b>	---

### **1.Basic info**

#### **1.1.Recommendations to take this course**

#### **1.2.Activities and key dates for the course**

### **2.Initiation**

#### **2.1.Learning outcomes that define the subject**

#### **2.2.Introduction**

### **3.Context and competences**

#### **3.1.Goals**

#### **3.2.Context and meaning of the subject in the degree**

#### **3.3.Competences**

#### **3.4.Importance of learning outcomes**

### **4.Evaluation**

### **5.Activities and resources**

#### **5.1.General methodological presentation**

The methodology followed for the teaching-learning process is mainly based on masterclasses exposing the main theoretical concepts of each topic. These theoretical concepts will be complemented by problem sessions that apply those concepts on realistic situations. Lab sessions and autonomous traffic capture exercises are also carried out so that students can configure real but simple networking equipment. In all the cases, active participation of the students will be promoted planning and solving topics proposed in class.

## 30159 - Communication Networks and Services

### 5.2.Learning activities

Learning activities are mainly the study of the learning material given in the classes, the realization of practical exercises provided for each topic and the realization of several lab sessions to configure networking equipment and to capture real network traffic traces.

### 5.3.Program

The program contains the following topics:

1. INTRODUCTION: Communications networks introductions and protocol architectures: OSI and TCP/IP model
2. PHYSICAL LAYER: Synchronous and asynchronous transmission. Transmission media. DTE/DCE interface
3. LINK LAYER: Link layer functions. Flow control. Error control. HDLC protocol
4. LAN NETWORKS: Medium access mechanisms. Ethernet. Ethernet devices. Virtual LANs
5. NETWORK LAYER: IPv4 protocol. Addressing. Auxiliary protocols: ICMP and ARP. Routing
6. TRANSPORT LAYER: Transport layer services and process multiplexing with ports. UDP and TCP protocols

### 5.4.Planning and scheduling

Planning and scheduling will be defined by the Center in the calendar of the corresponding academic year. Exam and other activities dates will be published in Moodle.

### 5.5.Bibliography and recommended resources

- |    |   |
|----|---|
| BC | Kurose, James F. Redes de computadoras : un enfoque descendente / James F. Kurose, Keith W. Ross ; revisión técnica Carolina Mañoso Hierro, Ángel Pérez de Madrid y Pablo ; revisión técnica para Latinoamérica Luis Marrone ... [et. al.] . - 5ª ed. Madrid : Pearson Educación, D.L. 2010 |
| BC | Stallings, William. Comunicaciones y redes de computadores / William Stallings ; traducción, Jesús Esteban Díaz Verdejo ... [et al.] ; revisión técnica, Raúl V. Ramírez Velarde, M. en C. Jaquelina López Barrientos . - 7ª ed. [reimp.] Madrid [etc.] : Pearson Educación, D.L. 2010      |