Subject: Network Management
Code: 32648
Center: Escuela Politécnica Superior
Program: Master in Telecommunication Engineering
Level: Graduate (Master)
Type: Core course
ECTS: 3

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1. COURSE TITLE

Network Management (GR)

1.1. Program

Master in Telecommunication Engineering

1.2. Course number

32648

1.3. Course area

Telematics Engineering

1.4. Course type

Core course

1.5. Year

First year

1.6. Semester

Second semester (first half)

1.7. Credit allotment

3 ECTS credits

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1.8.   Faculty data

Add @uam.es to all email addresses below.

Theory:

Dr. Jorge Enrique López de Vergara Méndez (Coordinator)
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Escuela Politécnica Superior
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1.9.   Objectives

The objective of this subject is to understand and apply the principles of design, configuration and operation of network and service management systems. Architecture and standards for network management will be presented.

As a result, the student will be able to:
- Outline the principles of the network management architecture, and apply them to the design of network management systems based on standard architectures.
- Outline and apply the principles of network management basic administration.

General objectives to be reached during this course are:

GENERAL OBJECTIVES	
G1	Project the deployment of a network management center.
G2	Outline the different network management functional areas, and related tasks.
G3	Know and apply existing network management models.
G4	Know and apply integrated network management concepts.
G5	Know and apply Internet network management framework.
G6	Know existing technologies and trends in the network management arena.

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1.10. Course contents

Syllabus overview

UNIT 1. Network management planning.

UNIT 2. Network management functions.

UNIT 3. Integrated network management.

UNIT 4. Internet network management framework.

UNIT 5. Technologies and trends in network management.

Detailed Syllabus

1. **Network management planning**
   1.1. Network management definition
   1.2. Network management objectives
   1.3. Costs in network management
   1.4. Network management project development flow
   1.5. Resources in a network management project
2. **Network management functions**
   2.1. Introduction
   2.2. Configuration management
   2.3. Failures management
   2.4. Performance management
       2.4.1. Performance indicators
   2.5. Account management
   2.6. Security management
3. **Integrated network management**
   3.1. Monitoring phases
   3.2. Heterogeneity problem
   3.3. Integrated network management requirements
   3.4. Standard network management models
       3.4.1. TMN architecture
4. **Internet network management framework**
   4.1. SNMP design
   4.2. Standard evolution
   4.3. SNMP architecture
   4.4. SMI information model
   4.5. Standard MIBs
   4.6. SNMP operations
   4.7. SNMP security
5. **Technologies and trends in network management**
   5.1. Technologies in network management
   5.2. Trends in network management

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1.11. Course bibliography

Basic bibliography (available in the library):

1. James F. Kurose, Keith W. Ross, "Computer Networking," Addison-Wesley, 6th edition, 2013
2. Douglas Comer, "Automated network management systems current and future capabilities," Pearson Prentice-Hall, 2007.
3. Adrian Farrel, "Network management know it all," Morgan Kaufmann, 2009
4. Jianguo Ding, "Advances in network management," CRC Press, 2010
5. Heinz-Gerd Hegering, Sebastian Abeck, and Bernhard Neumair, "Integrated Management of Networked Systems," Morgan Kaufmann, 1999
6. William Stallings, "SNMP, SNMPv2, SNMPv3, and RMON 1 and 2," Addison-Wesley, 2005.