



COMILLAS

UNIVERSIDAD PONTIFICIA

ICAI

ICADE

CIHS

Syllabus
2025 - 2026

GENERAL INFORMATION

Data of the subject	
Subject name	Network Planning and Operation
Subject code	DTC-MIT-528
Main program	Official Master's Degree in Telecommunications Engineering
Involved programs	Grado en Análisis de Negocios/Business Analytics y Máster Universitario en Ingeniería de Telecom. [Fifth year] Máster Universitario en Ingeniería de Telecomunicación y Máster. Univ. en Administración de Empresas [First year] Máster Universitario en Ingeniería de Telecomunicación [First year] Máster Universitario en Ingeniería de Telecomunicación y Máster en Ciberseguridad [First year] Máster Universitario en Ingeniería de Telecomunicación + Máster in Smart Grids [First year]
Level	Postgrado Oficial Master
Quarter	Semestral
Credits	6,0 ECTS
Type	Obligatoria
Department	Department of Telematics and Computer Sciences
Coordinator	Silvia Ortega González

Teacher Information	
Teacher	
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DESCRIPTION OF THE SUBJECT

Contextualization of the subject

Prerequisites

The alumn must know about the main foundations of principals telecommunication network technologies. Specifically IP, Ethernet, and optic fiber

Course contents

Contents

Topic 1: COMMUNICATION NETWORK PLANNING & OPERATIONS GENERAL CONCEPTS

- 1.1 – Introduction
- 1.2 – Telecommunication Equipments and Devices
- 1.3 – Telecommunication Networks
- 1.4 – Introduction to Network Planning
- 1.5 – Introduction to Network Operation

Topic 2: ACCESS NETWORKS PLANNING AND OPERATION

- 2.1 – Introduction, motivation and goals
- 2.2 – Cupper Access Networks
- 2.3 – Optic Fiber Access Networks

Topic 3: CONNECTIVITY NETWORKS PLANNING AND OPERATION

- 3.1 – Introduction, motivation and goals
- 3.2 – Packet Switching Networks (Ethernet, IP, MPLS)
- 3.3 – Transmission Networks (Electric and Photonic Switching)

Topic 4: NETWORK FUNCTION VIRTUALIZATION

- 4.1 Introduction to the virtualization new paradigm in telco networks
- 4.2 NFV (Network Function Virtualization) Impact in the traditional planning and operation
- 4.3 SDN (Software Defined Network) Impact in the traditional planning and operation



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EVALUATION AND CRITERIA

The use of AI to produce full assignments or substantial parts thereof, without proper citation of the source or tool used, or without explicit permission in the assignment instructions, will be considered plagiarism and therefore subject to the University's General Regulations.

Evaluation activities	Evaluation criteria	Weight
Final Test	To be taken into account 5 over 10 must be achieved	90
Partial Test	To be taken into account 5 over 10 must be achieved	50
Practical Uses Cases	Content 80% Presentation 20%	30
Practical Uses Cases Presentation and Debates	Knowledge 50% Participation 50%	30

Grading

Ordinary & Extraordinary Call Calification Weights

- 50% Final Test
- 20% Partial Test
- 30% Practical Uses Cases

At least a 4 points over 10 must be achieved in each part to be taken into account in the final calification other case will mean suspend subject

WORK PLAN AND SCHEDULE

Activities	Date of realization	Delivery date
Contents Comprehension and Study	During all the teaching period	
Practical Uses Cases	During all the teaching period	Final Test Date



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Group Exercises	During and after the proposal date	Informed when presented
Final Test preparation	During all the teaching period	May

BIBLIOGRAPHY AND RESOURCES

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<https://servicios.upcomillas.es/sedeelectronica/inicio.aspx?csv=02E4557CAA66F4A81663AD10CED66792>