

<b>Program</b>	<b>09TT- Engineering in Telecommunication Technologies and Services</b>
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<b>Course number and name</b>	
<b>Number</b>	95000031
<b>Name</b>	Computer Networks Redes de ordenadores
<b>Semester</b>	Y3-S5

<b>Credits and contact hours</b>	
<b>ECTS Credits</b>	4.5
<b>Contact hours</b>	45

<b>Coordinator's name</b>	Julio Berrocal
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<b>Specific course information</b>		
<b>Description of course content</b>		
<p>The aim of this course is that the students learn the organization of the Internet and other large IP networks and the main protocols and algorithms at the transport and network layers.</p>		
<b>List of topics to be covered</b>		
<ul style="list-style-type: none"> <li>• TCP/IP architecture. Standardization process. Names, addresses and ports.</li> <li>• Transport layer. Transport services. Multiplexing application processes. UDP. TCP. Congestion control. Flow control.</li> <li>• Network layer. IP addresses. Routing tables. IP, ICMP and ARP protocols. Path MTU discovery. Addressing plans. NAT. Distributed routing in IP networks. Hierarchical routing. Routing protocols: RIP, OSPF. BGP.</li> <li>• IPv6. Addressing and routing. Transition techniques.</li> </ul>		
<b>Prerequisites or co-requisites</b>		
None.		
<b>Course category in the program</b>		
<input checked="" type="checkbox"/> <b>R (required)</b>	<input type="checkbox"/> <b>E (elective)</b>	<input type="checkbox"/> <b>SE (selective elective)</b>

<b>Specific goals for the course</b>
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**Specific outcomes of instruction**

RA1: Understanding of the structure of the Internet, the standardization process and the properties of the naming and addressing resources.

RA2: Understanding how application, transport, network and subnet protocols work together.

RA3: Knowledge of the services provided by the transport protocols and criteria to select the most appropriate depending on the application requirements. Understanding of the transport protocols and related algorithms.

RA4: Understanding how an IP network works, both in terms of the operations performed to deliver traffic to the destination, and the processes running by the routers to automatically maintain the routing tables.

RA5: Understanding of the techniques for addressing and routing in large networks.

RA6: Knowledge of the limitations of IPv4 and the characteristics of IPv6.

**Student outcomes addressed by the course**

CG1-13, CE-TL1, CE-TL2, CE-TL4, CE-TL5, CE-TL1.

**Bibliography and supplemental materials**

James F. Kurose, Keith W. Ross. *Computer Networking*. 6th edition, Addison-Wesley, 2013.

Kevin R. Fall, W. Richard Stevens. *TCP/IP Illustrated, Volume 1: The Protocols*. 2nd edition, Addison-Wesley, 2011.

Larry L. Peterson, Bruce S. Davie. *Computer Networks: A Systems Approach*. 5th edition, Elsevier, 2012.

Andrew S. Tanenbaum. *Computer Networks*. 5th edition, Prentice Hall, 2011.

**Teaching methodology**

X lectures	X problem solving sessions	— collaborative actions	X laboratory sessions
<b>Other:</b>			