



SUBJECT NAME: DESIGN AND OPERATION OF COMMUNICATION NETWORKS / DISEÑO Y OPERACIÓN DE REDES DE COMUNICACIONES		
MASTER IN TELECOMMUNICATIONS ENGINEERING	COURSE: 1º	CUATRIMESTER: 1º

SESSION	CONTENT DESCRIPTION	TYPE				WEEKLY STUDENT HOURS		
		THEORY	PRACTICAL	LABORATORY	Lab room	DESCRIPTION	FACE-TO-FACE HOURS	TOTAL STUDENT TIME
1	Course presentation. Review: layer model, identifiers, relations between layers.	X				IPv4 Review.	1,66	5
2	Routing. Distance vector/link state protocols. Routing in Ethernet. IP routing.	X				Do 'IPv4 review' practice with CORE emulation environment	1,66	
3	Interdomain routing: introduction to BGP	X				Do 'Quagga introduction' practice with CORE emulation environment. Read [BGP], pags. 6-19, y 61-74. (reference [BGP] = 'BGP', Iljitsch van Beijnum, O'Reilly)	1,66	7
4	Interdomain connectivity, business model Conectividad Interdominio, tarificación y modelo de negocio in the Internet	X				Read 'The Art of Peering - The Peering Playbook'. William Norton.	1,66	
5	Business model in the Internet	X				Do 'BGP without relationships' practice with CORE emulation environment.	1,66	
6	BGP router model. Attributes and route selection in BGP	X				Read [BGP], pages 36-60	1,66	7
7	Route selection in BGP	X				Read [BGP], pages 23-26. Read ['Practical BGP', White, McPherson], pages 15-26	1,66	
8	Route selection in BGP and Route Reflectors	X				Solve problems from the proposed problem set	1,66	
9	Route selection problem resolution		X			Solve problems from the proposed problem set	1,66	7
10	Introduction to MPLS	X				Review MPLS	1,66	

11	MPLS	X				Review MPLS	1,66	7	
12	Introduction to Traffic Engineering. Traffic Engineering in interdomain routing					Read ['Practical BGP', White, McPherson], chapter 10	1,66		
13	Traffic Engineering with MPLS					Read "An overview of routing optimization for Internet traffic engineering". Wang, N, Ho, KH, Pavlou, G and Howarth, M	1,66	7	
14	VPNs and BGP		X				1,66		
15	BGP router configuration in Quagga	X				Execute Quagga commands presented in class in CORE.	1,66	7	
16	Analysis of the current Internet: prevalence of multimedia traffic. Roles and strategies of the actors involved in the provision of Internet connectivity	X				Read "The state of the Internet", Akamai.	1,66		
17	Laboratory: configuration of provider/customer and peer/peer relationships in BGP with Quagga			X	X	Review BGP and BGP router configuration in Quagga	1,66	7	
18	Laboratory: configuration of Traffic Engineering in BGP with Quagga			X	X	Review BGP and BGP router configuration in Quagga	1,66		
19	Network design: Architectures, scalability, fault tolerance	X				Read "Good Practices for Resilient Internet Interconnections", ENISA 2012	1,66	7	
20	Methodologies for network design, Exercises for network design	X				Read "Comprehensive Topology and Traffic Model of a Nationwide Telecommunication Network"	1,66		
21	Cabling. Residential deployments. Common Telecommunication Infrastructures		X				1,66	7	
22	Security in network protocols	X				Study chapter 8, "Computer Networking", Kurose, Ross.	1,66		
23	Security in network protocols: case study	X				Study chapter 8, "Computer Networking", Kurose, Ross	1,66	7	
24	Security in network protocols: case study		X			Review presented case study	1,66		
25	Security in network protocols: case study		X			Review presented case study	1,66	7	
26	Exercise on security analysis of a network protocol		X			Review presented case study	1,66		
27	Network management. Network management for BGP	X				Review network management	1,66	7	
28	Network management protocols and technologies	X				Review network management	1,66		
46,4 + 49,6 = 96									
		Prepare for evaluation, and evaluation itself							7
103									