

COURSE: Advanced communication networks and services		
DEGREE: Telematics Engineering	YEAR: 3rd	TERM: 1st

WEEKLY SCHEDULE OF THE COURSE									
WEEK	SESSION	DESCRIPTION	GROUPS (mark with X)		SPECIAL ROOM FOR SESSION (Computer class room, audio-visual classroom)	Indicate YES/NO if the session requires 2 teachers	WEEKLY WORK FOR STUDENT		
			LECTURES	SEMINARS			DESCRIPTION	CLASS HOURS	HOMEWORK HOURS (Max. 7h per week)
1	1	<ul style="list-style-type: none"> Presentation of the course Review of IP Network routing 	X			No	<ul style="list-style-type: none"> Review the concepts learned in Session 1 Solve a simple static routing exercise 	1,66	7h
1	2	<ul style="list-style-type: none"> Introduction to the virtual environment and the equipment of the laboratories Introduction to the development of protocols with librawnet 		X		No	<ul style="list-style-type: none"> Review the concepts learned in Session 2 Install the virtual laboratory on the personal PC Review ARP Address Resolution Protocol Prepare the ARP client Pseudocode 	1,66	
2	3	<ul style="list-style-type: none"> Design of an ARP client 	X			No	<ul style="list-style-type: none"> Development of the ARP client 	1,66	7h

2	4	<ul style="list-style-type: none"> Development of an ARP client Test the ARP client functionality 		X	4.1.B01/ 4.1.B02	No	<ul style="list-style-type: none"> Review IP network level: IP addresses, IP header Prepare prototype of IP layer functions Prepare pseudocode function <code>Ipv4_route_lookup ()</code> 	1,66	
3	5	IP network layer design: layer structure, provided functions and IP header	X			No	<ul style="list-style-type: none"> Development of IP network layer Prepare pseudocode of main IP layer functions 	1,66	7h
3	6	IP network layer development: General layer structure, IP header, <i>route lookup function</i>		X	4.1.B01/ 4.1.B02	No	Continue with the development of the IP network layer	1,66	
4	7	IP network layer design: send/receive and client/server	X			No	<ul style="list-style-type: none"> Continue with the development of the IP network layer Prepare IP layer pseudocode 	1,66	7h
4	8	<ul style="list-style-type: none"> IP network layer development: send/receive and client/server Test the IP network-layer functionality 		X	4.1.B01/ 4.1.B02	No	<ul style="list-style-type: none"> Review UDP Transport: Ports, UDP Header and Pseudo-header IP Prepare pseudocode of UDP layer, including the prototypes of the main functions 	1,66	
5	9	UDP transport layer design: General layer structure, port handling	X			No	Continue with the development of the UDP/IP protocol stack	1,66	7h
5	10	<ul style="list-style-type: none"> Development of the UDP transport layer Test the UDP transport layer functionality 		X	4.1.B01/ 4.1.B02	No	<ul style="list-style-type: none"> Read the router's manual Review IP configuration tools in Linux Prepare IP configuration exercise for routers and host 	1,66	
6	11	IP configuration on routers and hosts: Linksys routers and the IP command	X			No	<ul style="list-style-type: none"> Review the concepts learned in session 11 Design and test static routing scenario using the virtual environment Deliver the developed ARP/IP/UDP protocol stack 	1,66	7h
6	12	<ul style="list-style-type: none"> Evaluation of the developed ARP/IP/UDP Protocol stack (I) Configuring a static routing environment (I) 		X	4.1.B01/ 4.1.B02	Yes (2)	Read RIPv2 's RFC	1,66	

							<ul style="list-style-type: none"> Continue configuring the static routing scenario 		
7	13	<ul style="list-style-type: none"> RIP routing protocol 	X			No	<ul style="list-style-type: none"> Review the concepts learned in Session 13 Complete the design and test the configuration using the virtual environment 	1,66	7h
7	14	<ul style="list-style-type: none"> Evaluation of the developed ARP/IP/UDP protocol stack (II) Configuration of a static routing environment (II) Test the static routing environment 		X	4.1.B01/ 4.1.B02	Yes (2)	<ul style="list-style-type: none"> Complete the design and test the routing scenario using the virtual environment 	1,66	
8	15	<ul style="list-style-type: none"> Configuration and deployment of RIP protocol: basic configuration, advanced aspects and monitoring 	X			No	<ul style="list-style-type: none"> Review the concepts learned in Session 15 Design and test the configuration of the RIP routing scenario using the virtual environment 	1,66	7h
8	16	<ul style="list-style-type: none"> Configuration of a RIP-based routing environment Test the RIP-based routing environment 		X	4.1.B01/ 4.1.B02	No	<ul style="list-style-type: none"> Complete the design and test the configuration using the virtual environment 	1,66	
9	17	<ul style="list-style-type: none"> OSPF routing protocol Configuration and deployment of the OSPF protocol: basic configuration, advanced aspects and monitoring Advanced aspects of configuration and deployment of the RIP and OSPF protocols 	X			No	<ul style="list-style-type: none"> Review the concepts learned in Session 17 Design and test the configuration of the OSPF routing scenario using the virtual environment 	1,66	7h
9	18	<ul style="list-style-type: none"> Configuration of an OSPF-based routing environment Test the OSPF-based routing environment 		X	4.1.B01/ 4.1.B02	No	<ul style="list-style-type: none"> Complete the design and test the configuration using the virtual environment 	1,66	
10	19	<ul style="list-style-type: none"> Problem resolution session regarding the development of the ARP/IP/UDP protocol stack. Preparation for the RIPv2 development 	X			No	<ul style="list-style-type: none"> Finish the development of the ARP/IP/UDP protocol stack (if needed) Design and test the routing scenario with RIP and OSPF using the virtual environment 	1,66	7h

10	20	<ul style="list-style-type: none"> Configuration of an OSPF-and RIP-based routing environment Test the OSPF-and RIP-based routing environment 		X	4.1.B01/ 4.1.B02	No	<ul style="list-style-type: none"> Completing the design and test the configuration using the virtual environment Edit the deliverables on the full routing scenario Review the RIPv2 routing protocol: header, state machine, and message exchange 	1,66	
11	21	Design of a RIPv2 daemon: general design, RIPv2 message format and RIPv2 client	X			No	Start the development of the RIPv2 daemon	1,66	7h
11	22	<ul style="list-style-type: none"> Evaluation of the complete routing environment (I) Development of a RIPv2 daemon: RIPv2 messages And RIPv2 client 		X	4.1.B01/ 4.1.B02	Yes (2)	Continue the development of the RIPv2 daemon	1,66	
12	23	Design of a RIPv2 daemon: Handling RIPv2 routing tables and enabling multicast reception	X			No	Continue the development of the RIPv2 daemon	1,66	7h
12	24	<ul style="list-style-type: none"> Evaluation of the complete routing environment (II) Development of a RIPv2 daemon: handling RIPv2 routing tables and multicast reception 		X	4.1.B01/ 4.1.B02	Yes (2)	Continue the development of the RIPv2 daemon	1,66	
13	25	Design of a RIPv2 daemon: RIPv2 Server	X			No	Continue the development of the RIPv2 daemon	1,66	7h
13	26	Development of a RIPv2 daemon: RIPv2 server		X	4.1.B01/ 4.1.B02	No	Continue the development of the RIPv2 daemon	1,66	
14	27	Design of a RIPv2 daemon: improvements	X			No	Continue the development of the RIPv2 daemon	1,66	7h
14	28	<ul style="list-style-type: none"> Development of a RIPv2 daemon Test the developed RIPv2 daemon 		X	4.1.B01/ 4.1.B02	No	<ul style="list-style-type: none"> Group tutorials with routers (2X2h) Deliver the RIPv2 daemon and improved protocol stack 	1,66	
15	29	Evaluation of the RIPv2 daemon and the protocol stack with the improvements (I)		X	4.1.B01/ 4.1.B02	Yes (2)		1,66	
Subtotal 1								48,33	98
Total 1 (<i>Hours of class plus student homework hours between weeks 1-14</i>)								146,33	

15	30	<ul style="list-style-type: none"> Evaluation of the RIPv2 daemon and the protocol stack with the improvements (II) 		X	4.1.B01/ 4.1.B02	Yes (2)		1,66	
16-18		<ul style="list-style-type: none"> Final Exam (non-continuous evaluation only) 			4.1.B01/ 4.1.B02	Yes (2)		1,66	7
Subtotal 2								3,33	7
Total 2 (<i>Hours of class plus student homework hours between weeks 15-18</i>)								10,33	
TOTAL (<i>Total 1 + Total 2. <u>Maximum 180 hours</u></i>)								156,66	