

Module/ course form

To be completed by Course Team	Module name : Block of elective courses					Module code: M23	
	Course name: Routing and switching					Course code:	
	Faculty: Institute of Applied Informatics						
	Field of study: IT						
	Mode of study : Full-time		Learning profile: PRACTICAL			Speciality: Operating Systems and Computer Networks Management	
	Year/ semester: 3/5		Module/ course status: Compulsory course			Module/ course language:	
	Type of classes	lecture	lessons	lab	project	tutorial	other (please specify)
	Course load	15	-	45	-	-	-

Module/ course coordinator	Mariusz Bagiński, M.Sc. (Cisco CCNA, CCDA, CCNP, CCAI, IYoS, LINUX LPIC-1, SUSE CLA)
Lecturer	Mariusz Bagiński, M.Sc. (Cisco CCNA, CCDA, CCNP, CCAI, IYoS, LINUX LPIC-1, SUSE CLA)
Module/ course objectives	Teaching students to build, monitor and troubleshoot small to medium sized computer networks. (Based on Cisco devices).
Entry requirements	Base knowledge of computer networks theory. (4 th semester).

LEARNING OUTCOME		
Nr	LEARNING OUTCOME DESCRIPTION	Learning outcome reference
1	Student knows technologies like LAN and WAN, including interfaces and cabling, routers and switches operation. Student knows the rules of licensing Cisco IOS. Student knows the rules of network management, works with appropriate software and devices, and protects them from unauthorized access. Student is fluent in IPv4 addressing, performs calculations on the masks.	K_W04, K_W05, K_W08, K_W12, K_W16, K_W18
2	Student manages of router and switch software. Configuring Routing in small and medium-sized computer network and configures L2 protocols running on the switch. Student monitors and debugs the operation of network protocols and router and switch operation.	K_U09, K_U13, K_U08, K_U10, K_U14, K_U22.

3	Student is aware of devaluation of computer solutions. Student works in a team locally and remotely.	K_K01, K_K04.
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CURRICULUM CONTENTS	
Lecture	
1. Network devices: routers and switches. ISO/OSI reference model. 2. Routed protocols. Introduction to IPv4 and IPv6 addressing. 3. Static routing and dynamic routing protocols. 4. RIP – Routing Information Protocol. 5. EIGRP – Enhanced Interior Gateway Routing Protocol. 6. OSPF – Open Shortest Path First. 7. MAC, CAM, TCAM. 8. VLAN, TRUNK, IEEE802.1Q, ISL. 9. VTP – Virtual Trunk Protocol. 10. Router on the stick. 11. STP/RSTP. (Spanning-Tree Protocol/Rapid Spanning-Tree Protocol). 12. DHCP. 13. Leased Lines, Frame-Relay, IPSEC. 14. NAT/PAT. 15. SNMP.	
Tutorial	
Devices configuration and protocols described above. Labs on Cisco devices.	

Basic literature	Network Fundamentals: CCNA Exploration Companion Guide. Routing Protocols and Concepts: CCNA Exploration Companion Guide. LAN Switching and Wireless: CCNA Exploration Companion Guide. Accessing the WAN: CCNA Exploration Companion Guide. (Cisco Press, 2013).
Additional literature	Internet sources.

Teaching methods	Lectures and Labs.	
Assessment method		Learning outcome number
Theory exam (points).		01
Practical lab. exam (points).		02, 03
Form and terms of an exam	Score (points) = ((half _Theory + half_Lab.)/by_2. 100-92p (A), 91-85p (B+), 84-75p (B), 74-65p (C), 64-55p (D), 55-0p (E) – FAIL.	

STUDENT WORKLOAD	
	Number of hours
Participation in lectures	15
Independent study of lecture topics	10
Participation in tutorials, labs, projects and seminars	45
Independent preparation for tutorials*	40
Preparation of projects/essays/etc.	

Preparation/ independent study for exams	10
Participation during consultation hours	5
Other	2
TOTAL student workload in hours	127
Number of ECTS credit per course unit	5
Number of ECTS credit associated with practical classes	85 3,4 ECTS
Number of ECTS for classes that require direct participation of professors	67 2,7 ECTS