



MEĐIMURSKO VELEUČILIŠTE U ČAKOVCU POLYTECHNIC OF MEĐIMURJE IN ČAKOVEC

COURSE SYLLABUS

ACADEMIC YEAR: 2020/2021

1. GENERAL COURSE INFORMATION

1.1 Course name	Computer network administration			
1.2 Study program/s	Undergraduate professional study of computer engineering			
1.3 Course status (O, E)	Elective course	1.6 Mode of instruction (number of hours)	Lectures	15
1.4 Course code			Exercises	45
1.5 Course abbreviation	ARM		Seminars	
1.6 Semester	5 th		E-learning	
1.7 ECTS	5	1.7 Place and time of instruction	Premises of the Polytechnic of Međimurje in Čakovec, according to the schedule published on the website of the Polytechnic	

2. TEACHING STAFF

2.1 Course leader/s-title	Robert Poljak, lecturer	contact	robert.poljak@mev.hr
2.2 Assistant/s- title	-	contact	-
2.3 Instruction held by- title	Robert Poljak, lecturer	contact	robert.poljak@mev.hr

3. COURSE DESCRIPTION

3.1 Course goals	The goal of the course is to master the concepts of administration and management of moderately complex computer networks.									
3.2 Prerequisites	There are no prerequisites for enrolling or finishing the course.									
3.3 Course outcomes	After successfully completing the course, students will be able to: I1 - Apply the use of CLI to configure the router I2 - Apply the use of CLI to configure the switch I3 - Compare the advantages and disadvantages of using VLANs I4 - Explain how are DHCP and DNS protocols used I5 - List the advantages and disadvantages of static and dynamic routing									
3.4 Course content	The course prepares students to work on moderately complex computer networks using advanced device administration methods and moderately complex network topologies.									
3.5 Types of coursework	X	Lectures	X	Exercises		Blended e-learning	X	Individual activities		Laboratory
		Seminars and workshops	X	Distant learning		Field classes		Multimedia and network		Mentorship
		Other								
3.6 Language of instruction	Croatian/English									
3.7 Monitoring students' work (1 ECTS = 30 hours)	2	Class attendance				Seminars			Essay	
		Class activity				Project			Report/paper	
	1	Midterm exams			2	Practical task			Continuous knowledge check	
		Written exam				Experimental work				

	Oral exam		Research																																												
3.8 Assessment and evaluation of students' work during classes and at the final exam	<table border="1"> <thead> <tr> <th>Activity specification</th> <th>Percent %</th> <th>Points</th> </tr> </thead> <tbody> <tr> <td colspan="3" style="text-align: center;">Assessment during instruction</td> </tr> <tr> <td>Midterm for the practical part</td> <td>70%</td> <td>70</td> </tr> <tr> <td>Midterm for the theoretical part</td> <td>30%</td> <td>30</td> </tr> <tr> <td colspan="3" style="text-align: center;"><i>Exam assessment for the students who failed to fulfil all the obligatory requirements during the semester</i></td> </tr> <tr> <td><i>Oral exam</i></td> <td><i>100%</i></td> <td><i>100</i></td> </tr> <tr> <td>Total:</td> <td>100%</td> <td>100</td> </tr> </tbody> </table>					Activity specification	Percent %	Points	Assessment during instruction			Midterm for the practical part	70%	70	Midterm for the theoretical part	30%	30	<i>Exam assessment for the students who failed to fulfil all the obligatory requirements during the semester</i>			<i>Oral exam</i>	<i>100%</i>	<i>100</i>	Total:	100%	100																					
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3.10 Specific features related with taking the course	<p>For a student to pass the course, he/she must earn a minimum of 50% of the points available for that learning outcome for EACH learning outcome. The final grade is obtained on the exam period and is the sum of points earned during classes. Students who did not complete the midterm exam must attend the oral exam where all learning outcomes are checked.</p>																																														
3.11 Students obligations	<p>Full-time students are required to attend at least 70% of the total number of hours of lectures and exercises to exercise the right to take the exam. Part-time students are required to attend at least 30% of the total number of hours of lectures and exercises to exercise the right to take the exam. If the student has not fulfilled all the obligations set by the course, he is obliged to attend the lectures again and meet the conditions for taking the exam.</p> <p>Attendance can be offset by online tuition, organised webinars and added assignments given by teachers. One lesson lasts 45 minutes, and several hours form a teaching unit. Absence from one teaching unit is counted as one absence. Delays and apologies are recorded separately. In that case, if the student missed more than 50% of classes, and has a justifiable reason/apology, the request should be submitted to the Department Council, which then decides on the justification of student absences with the obligatory opinion of the course leader.</p>																																														
3.12 Written assignments	<p>Seminar papers must be computer written and must have between 8 and 12 text cards (font Calibri, size 12) from introduction to conclusion, together with</p>																																														

	pictures, tables, etc. Seminar papers must have an adequate title page, table of content, numbered pages and list of literature used. The seminar paper should be divided into chapters and contain a list of references, a list of figures, tables, and graphs and a summary / conclusion containing 250 words. The student guarantees the authenticity of the work with his signature.	
3.13 Required reading	1.	T. McMillan: Cisco Networking Essentials 2nd Edition, Sybex (2015.)
3.14 Additional reading	1.	Wendell Odom: CCNA 200-301 Official Cert Guide, Volume 1 (2019.)
	2.	Web site https://www.netacad.com/

4 ADDITIONAL COURSE INFORMATION

4.1 Quality control	The quality of the program, teaching process, teaching skills and level of mastery of the material will be established by conducting a written evaluation based on questionnaires, and in other standardised ways and in accordance with the by-laws of the Polytechnic of Međimurje in Čakovec.
4.2 Contact the teacher	Students can contact the teacher during the office hours and during classes, while for short questions and explanations they can contact him/her any day during working hours by coming in person or by landline. It is also possible to ask questions by e-mail, which will be answered in 48 hours at the latest. It is desirable for students to come as often as possible for any possible questions during the teacher's office hours.
4.3 Information about the course	It is the obligation of each student to be regularly informed about the course. All notifications about the classes or possible postponement of classes will be posted on the bulletin board and on the website of the Polytechnic at least 24 hours in advance.
4.4 Course contribution to the study program	IS10 Distinguish types and communication protocols of computer networks IS18 Apply standards, methods, and techniques to analyse security threats and defend against them IS19 Use tools and methods for planning, building, and maintaining computer networks based on wired or wireless communication media IS20 Install, configure, and manage specific operating systems and network services in complex network environments

5. ANALYSIS OF COURSE TOPICS (the number of hours is equal to the number of lectures and exercises of the course)

LECTURES				
Hours	Topic and description	Method	Learning outcomes	Course outcome
1.	Introduction to course and software tools used	Lecture	Identify parts of the software used	1
2.	Introduction to CLI	Lecture	List the advantages and disadvantages of using CLI	1
3.	Overview of basic commands	Lecture	Recognize commands for configuring basic parameters of network device	1
4.	Basic configuration of router	Lecture	Recognize commands for basic router configuration	1
5.	Assigning IP addresses and static routes	Lecture	Identify commands for assigning IP addresses to interfaces and adding static routes	1
6.	Introduction to VLANs	Lecture	Identify the reasons for using VLAN technology	2
7.	VLAN on switches	Lecture	Identify commands for configuring VLANs on the switch	2
8.	VLAN on routers	Lecture	Identify commands for configuring VLANs on the router	2

9.	VLAN in complex network	Lecture	Design a way to use VLAN technology in a complex network topology	2
10.	Introduction to DHCP	Lecture	List the reasons for using the DHCP protocol	3
11.	Configuration of DHCP server	Lecture	Design a way to use the DHCP protocol	3
12.	Introduction to dynamic routing protocols	Lecture	List the reasons for using dynamic routing protocols	4
13.	OSPF protocol	Lecture	Devise a way to use the OSPF protocol	4
14.	Preparation for the midterm exam	Individual	-	-
15.	Midterm exam	Individual	-	-
EXERCISES/ SEMINARS				
Hours	Topic and description	Method	Learning outcomes	Course outcome
1.-3.	Introduction to course and software tools used	Computer exercises	Adjust the software environment for optimal performance	1
4.-6.	Introduction to CLI	Computer exercises	Use commands for basic operation with the CLI	1
7.-9.	Overview of basic commands	Computer exercises	Use commands for basic operation with the CLI	1
10.-12.	Basic configuration of router	Computer exercises	Use commands for basic configuration of router	1
13.-15.	Assigning IP addresses and static routes	Computer exercises	Use commands to assign IP addresses to interfaces and add static routes	1
16.-18.	Introduction to VLANs	Computer exercises	Use commands to configure VLAN technology on switches	2
19.-21.	VLAN on switches	Computer exercises	Use commands to configure VLAN technology on switches	2
22.-24.	VLAN on routers	Computer exercises	Use commands to configure virtual sub-interfaces on the router	2
25.-27.	VLAN in complex network	Computer exercises	Solve the task using VLANs in a more complex network scheme	2
28.-30.	Introduction to DHCP	Computer exercises	Use DHCP protocol configuration commands	3
31.-33.	Configuration of DHCP server	Computer exercises	Use DHCP protocol configuration commands	3
34.-36.	Introduction to dynamic routing protocols	Computer exercises	Use OSPF protocol configuration commands	4
37.-39.	OSPF protocol	Computer exercises	Use OSPF protocol configuration commands	4
40.-42.	Preparation for the midterm exam	Individual	-	-
43.-45.	Midterm exam	Individual	-	-