

<b>Study program:</b> Information technology			
<b>Type and level of studies:</b> Undergraduate studies (first level of studies, BSc)			
<b>Course title:</b> Computer Networks Security and Protection			
<b>Teacher in charge:</b> Marjan D. Milošević			
<b>Number of ECTS credits:</b> 6			
<b>Prerequisites:</b> -			
<b>Semester:</b> Winter (Odd)			
<b>Course objectives</b> Introducing to fundamentals of computer network security, forms of threats and attacks, security protocols, methods of protection of the network infrastructure and internet services, implementing protection software and applying various tools for computer networks security testing, via security solutions development, regulations, standards, and ethical features of computer resources misuse.			
<b>Learning outcomes</b> It is expected that the student: <ul style="list-style-type: none"> <li>- Independently performs risk analysis in networked computer systems</li> <li>- Use cryptography, organisational and other means of protection of the computer resources</li> <li>- Assess the security of the network services</li> <li>- Install and configure software for protection of the computer network and network services</li> </ul>			
<b>Summary of topics</b> <i>Theoretical classes</i> Forms of network attacks. Security policy and protection mechanisms. Risk analysis. Cryptography protection methods. Symmetric and asymmetric encryption. Digital signature and digital certificate. Message authentication. Virtual private networks and IPSec. Firewalls and intrusion detection systems. Web security. Wireless networks security. Organisational means of protection. Ethical hacking. Security and cloud computing. Security and Internet of things. <i>Practical classes</i> Network and server security assessment and performing attacks in a controlled lab environment. Application of protection measures on different TCP/IP layers. Cryptographic protocol implementation (TLS, SSH). Installation and configuration of protection software. Configuring firewall under Linux. Configuring intrusion detection system. Attacks and defence case studies.			
<b>Literature</b> [1] Stallings W., Cryptography and Network Security: Principles and Practice, Pearson, 2023, ISBN: 1-292-43748-0 [2] J.F.Kurose, K.W.Ross, Computer Networking: A Top-Down Approach, Eight Edition, Pearson, 2020, ISBN: 9780135928615 [3] Wenliang Du: Computer & Internet Security: A Hands-on Approach, Third Edition, 2022, ISBN: 978-1733003940			
<b>Number of active teaching hours</b>			Other classes
Lectures: 2	Practice: 2	Other forms of classes	
<b>Teaching methods</b> Interactive teaching model with practical work. Project method. Method of demonstration and case study.			
<b>Evaluation (maximum number of points 100)</b>			
<b>Exam prerequisites:</b>	<b>No. of points:</b>	<b>Final exam:</b>	<b>No. of points:</b>
Activities during teaching process		Final exam (written):	30
Projects		Final exam (oral):	20
Colloquium	30		
Practical classes	20		
<b>Grading system</b>			
<b>Grade</b>	<b>No. of points</b>	<b>Description</b>	
10	91-100	Excellent	
9	81-90	Exceptionally good	
8	71-80	Very good	
7	61-70	Good	
6	51-60	Passing	
5	Less than 51	Failing	