

Óbuda University John von Neumann Faculty of Informatics			Institute for Cyber-physical Systems		
<b>Name and code:</b> <i>Security of Computer Networks and Clouds (NIXSH1CBNE)</i> <b>Credits: 5</b>					
<i>Computer Science and Engineering BSc programme</i>			<i>2024/25 year II. semester</i>		
Subject lecturers: Dr. Kail Eszter, Farkas Attila, Zaletnyik Péter					
Prerequisites (with code):		Network Technologies I. (NIXHT1CBNE)			
Weekly hours: 4	Lecture: 2	Seminar.: 0	Lab. hours: 2	Consultation: 0	
Way of assessment:	mid-term tests, mid-term presentation, oral exam, lab exam				
<b>Course description:</b>					
<i>Goal:</i> The aim of the subject is to familiarize students with basic network and cloud security issues, to give students a deeper insight into the different defense mechanisms and techniques.					
<i>Course description:</i> The curriculum introduces network security basics: the devices, applications that comprise the network infrastructure, access management, authentication, authorization and accounting possibilities, router hardening, switch security issues, network Intrusion Detection Systems (IDS), network Intrusion Prevention Systems (IPS), Virtual Private Networks (VPN). During the lessons students also learn how to configure and maintain network devices with security measures and how to defend against known vulnerabilities. Finally, the students learn about cloud security models and the Openstack private cloud;it's security solutions via Keystone and Neutron components.					

Lecture schedule									
<i>Education week</i>	<i>Topic</i>								
1.	Openstack basics, Openstack Keystone								
2.	Openstack Neutron, Cloud security models								
3.	Introduction to network security, security threats								
4.	Securing network devices								
5.	Authentication, Authorization, Accounting								
6.	ACLs and firewall technologies								
7.	Zone based firewall								
8.	Securing Local Area Networks								
9.	Basics of secure communication								
10.	Holiday								
11.	Dedicated firewall, ASA								
12.	Intrusion Detection- IDS, IPS								
13.	VPN								
14.	Summary								
Midterm requirements									
	<table> <tr> <th><i>Education week</i></th><th><i>Topic</i></th></tr> <tr> <td>12</td><td>lab exam</td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> </table>	<i>Education week</i>	<i>Topic</i>	12	lab exam				
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Final grade calculation methods													
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Type of exam													
Oral and lab exam.													
Type of replacement													
Once in the first week of the exam period.													
References													
Mandatory: Lecture notes, Cisco Network Academy course material													
Recommended: Fundamentals of Network Security Companion Guide (Cisco Networking Academy Program) Cisco Systems, Cisco Networking Academy Program, ISBN: 1587131226 Fundamentals of Network Security Lab Companion and Workbook (Cisco Networking Academy Program) Cisco Systems, Inc., Cisco Networking Academy Program. ISBN: 1587131234 Matt Dorn, Preparing for the Certified OpenStack Administrator Exam, Packt Publishing, ISBN: 1787288412													

