

Óbuda University John von Neumann Faculty of Informatics		Institute for Cyber-physical Systems		
Name and code: <i>Security of Computer Networks and Clouds (NIXSH1CBNE)</i> Credits: 5				
<i>Computer Science and Engineering BSc programme</i>			<i>2022/23 year II. semester</i>	
Subject lecturers: Dr. Bánáti Anna, Dr. Kail Eszter, Farkas Attila				
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			
Course description:				
<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.				
Course description: 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.	Introduction to network security, security threats
2.	Securing network devices
3.	Authentication, Authorization, Accounting
4.	ACLs and firewall technologies
5.	Zone based firewall
6.	Securing Local Area Networks
7.	Basics of secure communication
8.	Dedicated firewall, ASA
9.	Intrusion Detection- IDS, IPS
10.	VPN
11.	Summary
12.	Lab exam
13.	Openstack basics, Openstack Keystone
14.	Openstack Neutron, Cloud security models
Midterm requirements	
<i>Education week</i>	<i>Topic</i>
12	lab exam
Final grade calculation methods	

Achieved result	Grade
89%-100%	excellent (5)
76%-88<%	good (4)
63%-75<%	average (3)
51%-62<%	satisfactory (2)
0%-50<%	failed (1)

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