Óbuda University John von Neumann Faculty of Informatics	Institute for Cyber-physical Systems

Name and code: *Network Technologies II. (NIXHT2CBNE)* **Credits***: 5*

Computer Science and Engineering BSc programme *2021/22 year I. semester*

Subject lecturers: Dr. Bánáti Anna, Dr. Kail Eszter	

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:

Goal: To obtain deeper insight into LAN and WAN technologies, advanced switching and routing to plan, configure, manage and troubleshoot small-to-medium size networks and to implement basic security considerations. In addition to get know the key concepts of software-defined networking and network automation.

Course description: The curriculum introduces LAN design concepts and network scaling possibilities. The course familiarizes the advanced switching (STP, HSRP, EtherChannel), basic and advanced distance-vector and link-state routing concepts (multi-area OSPF, BGP) and also introduces WAN technologies. The course materials also contain the quality requirements of the transmission and Quality of Service (QoS) basics, troubleshooting concepts, IP access-lists and basic security features. Students are also introduced to network management tools and learn key concepts of software-defined networking, including controller-based architectures and how application programming interfaces (APIs) enable network automation.

Lecture schedule	
Education week	*Topic*
1.	Revision
2.	Etherchannel
3.	Hot Standby Routing Protocol
4.	Basic OSPF
5.	Advanced OSPF
6.	Advanced routing
7.	Basic network security concerns
8.	ACL
9.	NAT
10.	WAN, PPP
11.	QoS
12.	Network Management, Troubleshooting
13.	Complex Configuration
14.	Summary, consultation

Midterm requirements

Chapter and final exams at Cisco netacad and packet tracer homeworks during the semester.

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 on the 14th week.

References

Mandatory: Lecture notes, Cisco Network Academy course material

Recommended:
Tannenbaum A. S.: Computer Networks, 3rd extended edition, Prentice Hall-Panem, 2013
Anurag Kumar; D. Manjunath; Joy Kuri: Communcation Networking - Analytical approach; Elsevier; 2004
Larry L. Peterson; Bruce S. Davie: Computer networks - a systems approach; Elsevier; 2007
TCP/IP Tutorial and Technical Overview; IBM; 2006