Course Name : Computer Networks

Course Code	Course Type	Regular Semester	Lecture (hours/week)	Seminar (hours/week)	Lab. (hours/week)	Credits	ECTS
CMP 220	B	Spring	2.00	0.00	2.00	3.00	6.00

Lecturer	Alban Deda, Msc
Assistant	Erjola Osmani, Msc
Course language	Albanian
Course level	Bachelor
Description	Computer Networking covers one of the broadest fields of the Information Technology.The course covers the basic knoledge of a network, such as OSI Layer and TCP/IP model with all their undersections. The course covers deeply the communications between the protocols, and the configuration of different equipments. Their connections in the distance, troubleshooting and the security of the networking and PCs that are included in it, especially if they are exposed to the outside risk, and the protection of the cybernetic assaults
Objectives	
Core Concepts	1.Network Models 2. Topology of cabling 3. Tcp/IP 4. Subnetting 5. Protocols of comunications 6. HTTPS, Telent, SSH, SMTP, PoP3, IMAP4, FTP 7. Static/Dynamic Routings 8. IPv4/IPv6 9. VLAN 10. Virtualization and Cloud Computing 11.Network Monitoring 12. Troubleshooting 13. Disaster Recovery 14. Network Security

Course Outline

Week	Topic
1	Networking. OSI and TCP/IP Models General knoledge of networking. Two models of networking, and the clasification of different equipments, and where do they fit in both models. (Fq. 41 – 104)
2	Cabling and the topologies of Networking Knoledge of cabling and different topologies of networking. The way the equipments are connected in the networking. The types of mediums they use. How they communicate with each other, what kind of protocols they use, and the intermediate equpemnets that are used for this communication (Fq. 105 – 140)
3	Basics of ethernet The lecture shows different types of ethernet, as one the basic cabling types of networking. The difference between megabit, gigabit etc. The differences between straight and crossover cabling. How the equpments get connected through a switch, and the maximal distances these types of communication (Fq.141 – 196)
4	Installation of a real life network This lecture shows the process of the installation of a real life network. The use of diagrams and documentation of network, installation of a network card. Excecution of a simple troubleshooting, and the basis of disaster recovery, in case of any problem occurs (Fq.197 – 280)
5	TCP/IP Basics The lecture explains the aim, and the use of the ports and protocols. It shows how the TCP/IP protocol works. Subnetting, (Fq.280 – 359)
6	Routing The lecutre explains the concepts of switching and routing, and the specific equipments that are used in these layers. How router and switch work, and the static/dynamic routing. The configuration of a router. (fq.360 – 425)
7	TCP/IP Applications Aplications of TCP/IP explains the functions of network services. How can we access remotely the equpments, by enabling the services. Basics of TCP/IP, HTTP, HTTPS, TELENT, SSH, SMTP, POP3, IMAP4, (Fq.426 – 558)
8	Midterm Exam

9	TCP/IP Security Lecture explains the security that is needed when we create a network. THe methods of authentiaction and access control. Different standarts of TCP/IP Security and implementation of IPv6 (Fq.559 – 698)
10	Remote Connectivity The lecture explains different ways of accessing remotely a network. WAN technologies and the differences between the equipments used. Different topologies used, within two remote. (Fq.699 – 773)
11	Wireless Networking The lecture explains different wireless protocols. Troubleshooting of the network perfomance, and the steps to be taken, in order to protect these wireless equipments from remote attack. (fq.774 – 851)
12	Virtualization Cloud Computing and Mobile Networking The concepts of virtualization and storage network technologies. The reasons why these technolgies overshine the other methods of storage, such as local keeping of the servers. Advantages and disadvantages.. (Fq.852 – 916)
13	Real life network How to create a real life network, which is made of modems, router, switch, cabling and different hosts that create the network, such as PC, printers and every other equipments that works over TCP/IP. (fq.917 – 955)
14	Management and Security of Network. This lecture explains the risk management in networking, and the latter is under attack, from outside or within its own network equipment. Which are the methods of disaster recovery, and best practices for the protection of network (fq.956 – 1060)
15	Monitoring and Troubleshooting of Network This lecture explains how to monitor a network. The issues, that a network may have, when other hosts are added to the network. Which are the standart methods of troubleshooting. The way that SNMP works, and what is its use. Different ways of monitoring.. (fq.1061 – 1148)
16	Final Exam

Prerequisites	The student must attend the course at a minimum rate of 75%.
Literature	• Comptia, Network+, Seventh Edition, Mike Meyers, MC Graw Hill Education, 2018 ISBN 978-1-26-012239-8
References	• CCNA Routing and Swtiching Study Guide, Todd Lammle, Sybex,2013 ISBN : 978-1-118-74970-8

Course Outcome

1	Students will have sufficiently deep knowledge of network concepts.
2	Students will be able to perform various subnetting calculations, convert from the IP system to the binary system, which is the foundation of all subsequent network division actions into different VLANs.
3	Students will be able to build a physical network with all the necessary equipment for a LAN (Local Area Network).
4	Students will be able to configure a wide range of devices, both for routing and switching in computer networks, such as Mikrotik, Cisco, Linksys, HP technologies, etc.
5	Students will be able to create various rules for protecting computer networks from the risks of being exposed to the internet.
6	Students will be able to pursue the most recognized international certifications, with the final goal of preparing them to be ready for the job market as soon as they leave school. This is one of the reasons why Comptia Network+ was chosen as a course, as it is one of the most well-known books and certifications in the world today in the field of computer networks.

Course Evaluation

In-term Studies	Quantity	Percentage
Midterms	1	50
Quizzes	0	0
Projects	0	0
Term Projects	0	0
Laboratory	0	0
Class Participation	0	0
Total in-term evaluation percent		**50**
Final exam percent		**50**
Total		**100**

ECTS Workload (Based on Student Workload)

Activities	Quantity	Duration (hours)	Total (hours)
Course duration (Including the exam week: 16x Total hours of the course)	16	4	64
Study hours outside the classroom (Preparation, Practice, etc.)	14	6	84
Duties	0	0	0
Midterms	1	0	0
Final Exam	1	2	2
Other	0	0	0
Total Work Load			**150**
Total Work Load / 25 (hours)			**6.00**
ECTS			**6.00**