

COMPUTER ENGINEERING (LM55)

(Lecce - Università degli Studi)

Insegnamento NETWORK TECHNOLOGIES

GenCod A003135

Docente titolare Giovanni CICCARESE

Insegnamento NETWORK TECHNOLOGIES

Insegnamento in inglese NETWORK TECHNOLOGIES

Settore disciplinare ING-INF/05

Corso di studi di riferimento COMPUTER ENGINEERING

Tipo corso di studi Laurea Magistrale

Crediti 9.0

Ripartizione oraria Ore Attività frontale: 81.0

Per immatricolati nel 2016/2017

Erogato nel 2017/2018

Anno di corso 2

Lingua ITALIANO

Percorso PERCORSO COMUNE

Sede Lecce

Periodo Primo Semestre

Tipo esame Orale

Valutazione Voto Finale

Orario dell'insegnamento

<https://easyroom.unisalento.it/Orario>

BREVE DESCRIZIONE DEL CORSO

This course proposes the study of some fundamental aspects of the operation of modern computer networks, such as traffic control and quality of service, the support of wireless and mobile communications, security. The study includes the analysis of the network technologies which represent the state of the art on the above issues and a computer networks design methodology supported by a number of case studies which concern the selection of the most appropriate technologies depending on their operating contexts. Particularly, the criteria for designing network systems that meet given requirements in terms of performance, reliability and availability are discussed.

PREREQUISITI

Fundamentals of Computer Networking, Probability Theory, Markov Chains

OBIETTIVI FORMATIVI

After the course the student should

- understand how performance, reliability and availability of network systems can be modeled.
- be able to design a computer network with given requirements and to configure network devices in a campus network for high availability

MODALITA' D'ESAME

Oral

PROGRAMMA ESTESO

- Introduction to the course. (2 hours)
- Congestion Control and Traffic Control: principles of congestion control, approaches towards congestion control, flow control and congestion control in TCP, TCP/IP ECN. (4 hours)
- Multicast in the Internet: algorithms for multicasting, multicast in the Internet (multicast addresses in IPv4, IGMP, multicast routing protocols) (2 hours).
- IPv6: IPv6 addressing, IPv6 packet format, ICMPv6, transition from IPv4 to IPv6 (4 hours).
- Quality of Service (QoS) in IP networks: multimedia networking applications, protocols for real-time conversational applications(RTP, RTCP,SIP), Quality of Service, Queuing Disciplines, Shaping, Policing, Token Bucket, QoS in IP networks (RED, IntServ, DiffServ), MPLS (8 hours).
- Wireless and Mobile Networks: wireless channel characteristics, Wireless LANs and IEEE 802.11, CAPWAP, planning a wireless access network, Mobile IPv6, Vehicular Ad Hoc Networks and IEEE 802.11p (10 hours).
- Network Design: capacity planning, reliability, availability,switched LANs with redundant links (STP, RSTP), Virtual LANs, IEEE 802.1Q, Multiple Spanning Tree Protocol, Private Virtual LANs, Default Router redundancy (HSRP, VRRP, GLBP), top-down network design (design requirements, logical design, physical design, test plan and documentation) (18 hours).

TESTI DI RIFERIMENTO

- [1] J. Kurose e K.W. Ross, "Computer Networking. A Top-Down Approach", sixth edition, Pearson Addison-Wesley.
- [2] B.A. Forouzan, "Data Communications and Networking", fifth edition, McGraw-Hill.
- [3] P. Oppenheimer, "Top-Down Network Design", third edition, Cisco Press.
- [4] S. Convery, "Network Security Architecture", Cisco Press.
- [5] G. Bolch, S. Greiner, H. de Meer, K.S. Trivedi, "Queueing Networks and Markov Chains: Modeling and Performance Evaluation With Computer Science Applications", Wiley-Interscience.