**המחלקה למדעי המחשב**

**שם הקורס: טכנולוגיה לרשתות IP מספר הקורס: 800105**

היקף הקרוס: **שיעור**: 3  **תרגיל**: **מעבדה**: **נ"ז**:

**קורסי קדם:**

* TCP/IP 156331

מטרת הקורס:

* הכרת טכנולוגיות מתקדמות ברשת ה IP עבור QOS, SECURITY, MULTICAST
* למידת פרוטוקול IPv6, יתרונותיו והפרוטוקולים הנלווים

תכני הקורס:

1. Introduction
   1. The network interface and underlying technologies
   2. The Network (IP) layer
2. IP routing
   1. Algorithms (Distance Vector, Link State)
   2. Protocols (RIP, OSPF)
3. IP and Quality of Service (QoS)
   1. Motivation
   2. The Integrated Services (Intserv) architecture.
      1. IP classes of service: Best Effort, CLS, GS
      2. Integrated Services: RSVP
   3. The Differentiated Services (Diffserv) architecture
      1. Diffserv Code Point (DSCP)
      2. Per Hop Behavior (PHB)
   4. Intserv-Diffserv integration
4. IP Multicast
   1. IGMP (Ver 1,2,3)
   2. Switching of IP Multicast
5. IP Security
   1. IPSec: General
      1. Principles
      2. Security Protocols (AH,ESP)
      3. Key Management (IKE)
      4. Authentication and Encryption (RSA, DES)
   2. Security Socket Layer (SSL)
6. IPv6
   1. IPv6 Overview
   2. IPv6 header format
   3. ICMPv6
   4. Network Discovery protocol
   5. DHCPv6
   6. Addressing & Routing
   7. Migration form IPv4
7. Carrier Ethernet
   1. The need for layer 2 carrier networks
   2. Metro Ethernet Forum (MEF)
   3. Provider Backbone Bridge (PBB)
   4. Operation Administration and Maintenance

**מדדים להערכה:**

|  |  |  |  |
| --- | --- | --- | --- |
| **נוכחות:** | **בוחן:** | **תרגילים:** | **מבחן מסכם:** 100% |

ביבליוגרפיה:

Hagen, S., IPv6 Essentials, 1st Edition, O'Reilly, 2006

Loshin, P., IPv6 Clearly Explained, Morgan Kaufmann Publishers, 2004.

Soliman, H., Mobile IPv6: Mobility in a Wireless Internet, Morgan Kaufmann Publishers, 2004. (Chapters. 1-6(

Koster & Munoz, editors, Graphs and Algorithms in Communication Networks, Springer; 2010.

Department of Software Engineering / Department of Computer Science

Course Name: |IP Networks Technology Course No.: 800105

Course Scope: Lesson: 3 Exercise: Laboratory: Credits:

Preliminary Courses:

* Introduction to telecommunications
* TCP/IP

Learning Objectives:

* Learn the advanced technologies of IP networks for QoS, Multicast, Security
* Learn the IPv6 protocol, its advantages and related protocols

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Evaluation Components:

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| --- | --- | --- | --- |
| Attendance: | Quiz: | Exc.: | Final Exam: 100% |

Bibliography:

Hagen, S., IPv6 Essentials, 1st Edition, O'Reilly, 2006

Loshin, P., IPv6 Clearly Explained, Morgan Kaufmann Publishers, 2004.

Soliman, H., Mobile IPv6: Mobility in a Wireless Internet, Morgan Kaufmann Publishers, 2004. (Chapters. 1-6(

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