**Real Time**

**Group LTD**

**Real Time & Embedded Linux Solutions**

**Practical Networking**

**משך הקורס 90 שעות לימוד ותרגול בשיטת OJT**

Real Time Group is a multi-disciplinary dynamic and innovative Real-Time O.S. and Embedded Software Solutions Center, established in 2007.

Providing Bare-Metal and Embedded Linux solutions, professional services and consulting, end-to-end flexible system infrastructure, outsourcing, integration and training services for Hardware, Software and RT-OS \ Embedded Systems.

 The company is divided into the following three Divisions:

**Real Time Group**

**College**

**Development**

**Out-sourcing**

rt-ed.co.il rt-dev.com rt-hr.co.il

**Training Division:**

Professional Training Services for Hardware, Software, RT-OS and Embedded systems industries.

We provide the knowledge and experience needed to enable professional engineers to Develop, Integrate and QA Hardware, Software and Networking Projects.

In order to insure experience, all courses are practical – hands-on-training.  
The latest Development, QA and Automation equipment which are adopted by the industry are used.

All students are supplied with Development-Boards for home-work and course projects.

**Course Overview:**

The Networking course targets (C programmers) who wish to understand the notion of networking process and how the information transfers in the network, so they can make their programs more efficient. It's followed by dozens of class and home hands-on exercises and practices.

The course starts by introducing the general structure of the networking packets, it goes through explaining TCP/IP stack, and many important operations that related to networking such as switching, Routing, ARP, NAT, NFS, DNS, LAN, and so more, and application layer protocols and network security and ending with advanced network techniques.

\*\* An ARM Evaluation card is used for class demonstrations and homework exercises.

**Who should attend:**

* C programmers who want to understand network process very well.

**Prerequisite:**

* Knowledge in C programming language.
* English language.

**Practical Networking (90 AH)**

1. **Main characteristics** 
   * + - 1. מבנה ומאפיינים של רשת תקשורת
         2. טכנולוגיות LAN/ WAN
         3. suite IP/T
         4. רכיבים ברשת תקשורת – switch & router
         5. חיבור לרשת האינטרנט
         6. מגמות עכשוויות ברשתות תקשורת
2. **The Physical Layer**
   * + - 1. Typical network topologies: FDDI, Mash, Star, Ring.
         2. The Theoretical Basis for Data Communication.
         3. Ethernet.
         4. Physical Channels: Coax, UTP/STP.
         5. wireless communication, Optical fibers.
         6. cables, Physical devices, hubs repeaters, connectors.
3. **Network Modals**
   * + - 1. OSI – relation model.
         2. TCP/UDP/IP protocols.
         3. Network hierarchical modal.
         4. Data Encapsulation.
         5. Sniffing and analyzing Data packets.
4. **Local area network**
   * + - 1. Data-link layer.
         2. Network Interface Card.
         3. Frame processing.
         4. Collision and Broadcast Domains.
         5. Address resolution.
5. **Switching and Routing** 
   * + - 1. Switch and Bridge.
         2. Routing Algorithms.
         3. Mac Address Tables.
         4. Advanced Switching Techniques.
         5. Virtual LAN's.
         6. Spanning Tree Protocol.
6. **TCP/UDP/IP Routing**
   * + - 1. TCP/UDP/IP Overview.
         2. IP Addressing and Subnetting.
         3. IP Protocol suite.
         4. IP version 6- Overview.
         5. IP Multicasting and IGMP.
         6. TCP vs UDP.
         7. Understanding Virtual ports.
         8. TCP session sniffing.
         9. Connection Oriented vs Connectionless.
         10. IP communication and packet sniffing.
         11. IP Routing- RIP, OSPF and BGP Overview.
7. **Basic IP Troubleshooting** 
   * + - 1. Sniffers and Protocol Analyzer.
         2. Command line troubleshooting- Ping, Netstat, Arp, Tracert.
8. **Application layer protocols**
   * + - 1. DHCP, DNS, HTTP, FTP, SNMP, SMTP, POP3.
         2. The World Wide Web.
         3. Multimedia.
         4. Remote Admin and others.
9. **Wide area Network**
   * + - 1. Basic WAN terms.
         2. Packet switching vs Circuit switching.
         3. Multiplexing.
         4. MPLS, SDH, DSL and more.
10. **Network Security** 
    * + - 1. Common threats
          2. DoS, DDoS, Trojans, Viruses and Worms.
          3. IP and Port scanning.
          4. Using firewalls, Proxies and Content filters.
          5. Virtual private Networks.
          6. Cryptography.
          7. Symmetric/Public - Key Algorithms.
          8. Digital Signatures.
          9. Authentication Protocols.
11. **Advanced Network techniques** 
    * + - 1. VoIP and IP telephony.
          2. SIP
          3. H.323
          4. RTP
          5. Voice Sniffing.

**הערות :**

* פתיחת המסלול מותנה במספר נרשמים.
* המכללה מביאה ידעתם של המשתתפים שיתכנו שינוים בתוכן הקורסים ובמועדם.
* המכללה מתחייבת להודיע המשתתפים על כל שינוי.
* המכללה שומרת לעצמה את הזכות לשנות את תכני המסלול בהתאם לשיקול דעתה הבלעדית.