

## Computer Networks Course

<i>Name of the subject:</i> <b>Computer Networks - BSc</b>	<i>SUBJECT code:</i>	<i>Weekly hours:</i> 2 lectures + 2 exercises	<i>Credit:</i> 6
<i>Subject leader:</i> Vladimir Despotović	<i>Academic Degree:</i> Assistant Professor	<b>Prerequisites:</b> Acquired knowledge in Informatics I and Informatics II	

**Purpose:** Students learn fundamentals of network architectures and basic protocols and services of modern computer networks.

**Course description:** Students should understand the principles of networking, and should be trained for creating and maintaining local and wide area networks.

### Schedule

Weeks	Topics
1.	Basic notions in computer networks. Network topologies. Line configuration. Transmission modes.
2.	Network equipment. Active and passive components.
3.	LAN (Local Area Network), MAN (Metropolitan Area Network), WAN (Wide Area Network).
4.	Reference models. OSI reference model. Physical layer. Data-link layer. Network layer. Transport layer. Session layer. Presentation layer. Application layer.
5.	TCP/IP reference model. Network access layer. Internet layer. Transport layer. Application layer.
6.	Ethernet. Internet protocol. IPv4 Address Classes. Subnet mask. Subnets.
7.	Classless Inter-Domain Routing (CIDR). Network Address Translation (NAT). IPv6 addresses.
8.	Address Resolution Protocol (ARP). Reverse Address Resolution Protocol (RARP). Dynamic Host Configuration Protocol (DHCP).
9.	Transport layer protocols. Ports. User Datagram Protocol (UDP).
10.	Telnet. Secure Shell (SSH). Remote desktop. Domain Name System (DNS).
11.	File Transfer Protocol (FTP). Electronic mail (E-mail). Simple Mail Transfer Protocol (SMTP). Internet Message Access Protocol (IMAP). Post Office Protocol (POP).
12.	Web services. World Wide Web (WWW). Hypertext Transfer Protocol (HTTP). Network Time Protocol (NTP). Simple Network Management Protocol (SMNP).
13.	Voice over Internet Protocol (VoIP). Instant messaging. Video conference.
14.	Network security. Firewall. Proxy server. Intrusion Detection Systems (IDS) and Intrusion Prevention Systems (IPS).

**Final grade:**

Activity during the lecture: 10

Practical classes: 10

Colloquium: 20

Written exam: 40

Oral exam: 20

**Compulsory literature:**

1. A. S. Tanenbaum, D. J. Wetherall, Computer networks, 5<sup>th</sup> ed., Mikro knjiga, Belgrade, 2013.

**Supplemental literature:**

1. M. Veinović, A. Jevremović, Uvod u računarske mreže, Singidunum University, Belgrade, 2008.