

# **Bachelor Exam Requirements**

## **Subject: Hardware technologies**

**Academic year 2024**

1. Computer principles (historical development, function premise, binary logic, signal modulation).
2. Computer architecture (von Neumann and Harvard scheme of computer, Flynn taxonomy, motherboard, processor, processor micro architecture, memories, buses, controllers, additional cards, drivers).
3. Computer memory system and data storing (types, principles of function, frequencies, norms, logical and physical structure of HDD, RAM, ROM, Cash, CD, DVD, FLASH...).
4. Peripheral devices architecture (description, principles, functions, types, interface, examples).
5. Servers and workstations (differences, selection criteria, server roles, server technologies, backup include RAID).
6. Comware (principles of communication, signal modulation, types and comparison, media, mobile technologies).
7. ETHERNET (general description, principles, functions, topology, frames description, access method, network interface card, structure cabling).
8. RM ISO/OSI, TCP/IP (description and comparison, base protocols functions, IP address and addressing).
9. Internet (organizational structure, development, RFC documents, domains, technical premises for attachment, threats).
10. Routing (basic principles, routing protocols, routing algorithms, routers).
11. Network connecting and management (transmission media, technologies for various layers, WIFI, VPN, systems for remote control, solutions based on SNMP).
12. Operating systems principles (general overview, types of OS, processes, process and system resources administration, user interface).
13. File systems and data logical structure (general description, principles, comparison, examples).
14. Windows operating systems (principles of MS DOS, MS Windows, architectures, versions, functions, differences).
15. Operating systems Unix, Linux, BSD, MacOS, (basic ideas, advantages and disadvantages, open-source, creating and development, licenses, distribution, controlling (shell), differences, history and development).
16. Server operating systems (specifications, server and PC OS differences, server services, user administration).

- 1) GAGNE, Abraham Silberschatz; Peter Baer Galvin; Greg. *OPERATING SYSTEM CONCEPTS*. 9TH EDITION. Hoboken, NJ: WILEY, 2013. ISBN 978-111-8093-757.
- 2) BOYCE, Jim. *Windows 7 bible*. 9TH EDITION. Indianapolis, IN: Wiley Pub., c2009, xlv, 1201 p. ISBN 04-705-0909-0.
- 3) SHAPIRO, Jeffrey R. *Windows Server 2008 bible*. 9TH EDITION. Indianapolis: Wiley, c2008, xxxv, 971 p. ISBN 04-701-7069-7.
- 4) NEGUS, Chris a Christine BRESNAHAN. *Linux bible*. 8th ed. Indianapolis IN: Wiley, c2012, xxxvii, 816 p. ISBN 978-111-8283-974.
- 5) HENNESSY, John L a David A PATTERSON. *Computer architecture: a quantitative approach*. 5th ed. Amsterdam: Elsevier, c2011. ISBN 978-0-12-383872-8.
- 6) PETERSON, Davie - *Computer Networks : A Systems Approach* . 3th edition. Morgan Kaufman Publishers , 2003  
ISBN: 1-55860-832-X
- 7) BIGELOW, Stehen – *Mistrovství v počítačových sítích*  
Computer Press Brno, 2004  
ISBN: 80-251-0178-9
- 8) DOSTÁLEK, Libor - *Velký průvodce protokoly TCP/IP a systémem DNS*  
Computer Press, 2008  
ISBN: 978-80-251-2236-5
- 9) HUCABY, David - *Konfigurace směrovačů Cisco*  
Computer Press, 2004  
ISBN: 80-722-6951-8
- 10) VELTE Toby J. - *Síťové technologie Cisco*  
Computer Press, 2003  
ISBN: 80-7226-857-0
- 11) STALLINGS , William . *Operating Systems : Internals and Design Principles* . 6th edition. [s.l.] : Prentice Hall , 2008. 840 s. ISBN-13: 978-0136006329 . ISBN-10 0136006329
- 12) SILBERSCHATZ, Abraham , GALVIN , Peter Baer , GAGNE, Greg . *Operating System Concepts* . 8th edition. [s.l.] : Wiley, 2008. 992 s. ISBN-13: 978-0470128725. ISBN-10: 04701287