

“GHEORGHE ASACHI” TECHNICAL UNIVERSITY OF IAȘI

Faculty of Electrical Engineering

Department of Electrical Measurements and Materials

Competition for the position of **Associate professor** no. **14** in the Department’s Staff List

Job description (Disciplines):

1. Distributed monitoring systems
2. Web Technologies
3. Computerized dashboard systems

THE THEMATIC OF THE COMPETITION

for the position of **Associate professor** no. **14** in the Department’s Staff List

Discipline *Distributed monitoring systems*

1. Types of distributed systems (distributed computing systems, distributed information systems, distributed pervasive systems)
2. System architectures (centralized architectures, decentralized architectures, hybrid architectures)
3. Architectures versus middleware (interceptors, general approaches to adaptive software)
4. Virtualization (the role of virtualization in distributed systems, architectures of virtual machines)
5. Goals of a distributed system (making resources accessible, distribution transparency, openness, scalability, pitfalls)

Discipline *Web Technologies*

1. The OSI reference model
2. The TCP/IP reference model
3. Guided transmission media (twisted pairs, coaxial cable, power lines)
4. Types of area networks (PAN, LAN, MAN, WAN, Internetworks)
5. Address IP v4 - (IP Address Structure, IP Address Classes, IP Network Subnetting, IP Network Address Assignments)

Discipline *Computerized dashboard systems*

1. BUS - CAN Physical Layer Structure
2. BUS - CAN bus signal levels
3. BUS LIN - Network Architecture (general layout of the LIN Bus, serial communication principles, commander-responder principle, message frame format, threshold values)
4. Electronic control unit (ECU)
5. Infotainment and navigation systems

Bibliography:

1. Tanenbaum S. A., Van Steen M., Distributed Systems – Principles and Paradigms, Second Edition, Ed. Pearson Education. Inc. Pearson Prentice Hall, 686 pag. 2010, ISBN: 0-13-239227-5
2. Tanenbaum S. A., David J. Wetherall, Computer networks - fifth edition, 384 pag., 2003, Publisher: Prentice Hall, ISBN: 0-13-066102-3

3. IP Addressing: IPv4 Addressing Configuration Guide, Cisco IOS XE Release 3S - Americas Headquarters Cisco Systems, Inc. 170 West Tasman Drive San Jose, CA 95134-1706 USA <http://www.cisco.com>
4. Ibrahim D., Ibrahim A., The CAN Bus Companion - Projects with Arduino Uno & Raspberry Pi, pag. 158 pag., Elektor Publication, 2023, ISBN 9783895765414 Print, ISBN 9783895765421 eBook
5. Application Note - LIN Protocol and Physical Layer Requirements, 14 pag., Texas Instruments, Eric Hackett, 2022
6. Konrad R., Automotive Mechatronics, Konrad Reif Ed., Automotive Networking Driving Stability Systems Electronics, Editor, ISBN 978-3-658-03974-5 ISBN 978-3-658-03975-2(eBook)

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