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|  **UNIVERSITY OF NIŠ** |
| **Course Unit Descriptor** | **Faculty**  | Pedagogical Faculty in Vranje |
| **GENERAL INFORMATION** |
| Study program  | Technical Education and Informatics |
| Study Module (if applicable) | / |
| Course title | Computer networks and communication systems |
| Level of study | ☐ Bachelor ☒ Master’s ☐ Doctoral |
| Type of course | ☐ Obligatory ☒Elective |
| Semester  |  ☒ Autumn ☐Spring |
| Year of study  | Fourth |
| Number of ECTS allocated | 5 |
| Name of lecturer/lecturers | Emina Milovanovic |
| Teaching mode |  ☒Lectures ☐Group tutorials ☐ Individual tutorials ☐Laboratory work ☐ Project work ☐ Seminar ☐Distance learning ☐ Blended learning ☐ Other |
| **PURPOSE AND OVERVIEW (max. 5 sentences)** |
| *The course provides an introduction to fundamental concepts in the design and implementation of computer communication networks, their protocols, and applications. As a result of successfully completing this course, students will become familiar with layered communication architectures (OSI and TCP/IP); Understand the client/server model and key application layer protocols; Learn sockets programming and how to implement client/server programs; Understand the concepts of reliable data transfer and how TCP implements these concepts* |
| **SYLLABUS (brief outline and summary of topics, max. 10 sentences)** |
| **Introduction. Uses of computer networks (CN). Taxonomy of CN. The OSI reference model. Protocols and services. TCP/IP reference model. Network hardware and software. Data link layer. Design issues. Services providede to network layer. Framing. Error and flow control. Elementary data link protocols. Examples od data link protocols. HDLC. PPP. Local area networks. Media access sublayer. Channel alocation problem. Multiple access protocols (ALOHA, sloted ALOHA, CSMA/CD). Ethernet. Ethernet cabling. Frame format. Repeaters, hubs, bridges, switches, routers, gateways. The network layer. Virtual circuits and datagrams. Routing algorithms. Network layer in the INternet. IP protocol. IP addresses. Subnets. CIDR routing. Internet control protocols (ICMP, ARP, DHCP). Routing protocols (OSPF, RIP). The transport layer. transport services. Addressing. Connection establishment. Internet transport protocols. UDP. TCP. Socket programming. The application layer. DNS. e-mail. www.HTTP. Network security and kriptography. DES. Public key kriptography. Digital signatures.** |
| **LANGUAGE OF INSTRUCTION** |
| ☒ Serbian (complete course) ☐ English (complete course) ☐ Other \_\_\_\_\_\_\_\_\_\_\_\_\_ (complete course)☐Serbian with English mentoring ☐Serbian with other mentoring \_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| **ASSESSMENT METHODS AND CRITERIA** |
| **Pre exam duties** | **Points** | **Final exam** | **points** |
| **Activity during lectures** | **5** | **Written examination** | **20** |
| **Practical teaching** | **20** | **Oral examination** | **20** |
| **Teaching colloquia** | **35** | **OVERALL SUM** | **100** |
| **\*Final examination mark is formed in accordance with the Institutional documents** |