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|  **UNIVERSITY OF NIŠ** |
| **Course Unit Descriptor** | **Faculty**  | Faculty of Electronic Engineering, Niš |
| **GENERAL INFORMATION** |
| Study program  | Electrical Engineering and Computing |
| Study Module (if applicable) | Electronics |
| Course title | Computer Networks and Interfaces |
| Level of study | ☐Bachelor ☐ Master’s ☐ Doctoral |
| Type of course | ☐ Obligatory ☐ Elective |
| Semester  |  ☐ Autumn ☐Spring |
| Year of study  | III |
| Number of ECTS allocated | 6 |
| Name of lecturer/lecturers | Nikolić R. Tatjana, Đorđević Lj. Goran |
| Teaching mode |  ☐Lectures ☐Group tutorials ☐ Individual tutorials ☐Laboratory work ☐ Project work ☐ Seminar ☐Distance learning ☐ Blended learning ☐ Other |
| **PURPOSE AND OVERVIEW (max. 5 sentences)** |
| To introduce students to: a) the way in which computers communicate with each other, b) the way in which computers are grouped together to form a network, c) different network concepts and techniques that are crucial to successful implementation of computer networks, and d) various network implementation strategies and technologies that are used currently.The resulting knowledge of this subject will enable the students to understand the realization and the principles of networking components, applications, protocols, standards, and implementation strategies that are the basis for the design, operation, and maintenance of computer networks. |
| **SYLLABUS (brief outline and summary of topics, max. 10 sentences)** |
| Data transmission and networking. Network components. Layer model. The development of the Internet. The ISO-OSI reference model. The TCP/IP protocol stack. The physical layer and the data link layer. Signals and electrical interfaces. Asynchronous and synchronous transmission. Digital and analog transmission. Modulation techniques. Multiplexing. Errors detection and correction. Management at the data link layer and protocols. Point to point access. Random access, Ethernet. The network layer, networking, network address translation. Forwarding and fragmentation of a datagram. IPv4 and IPv6. Routing. Routing algorithms: distance vector, link state. Subnets and hierarchical addressing. Autonomous systems and the structure of the Internet. Algorithms and interdomain routing. The transport layer. Ports, and client-server model. UDP. TCP, segments, establishing a connection, state diagram, flow control, sliding window protocol, error control. Congestion control, the nature of congestion, router model, models of congestion control, slow start, fast retransmission, fast recovery. The application layer. TELNET, FTP, DNS, electronic mail. HTTP/Web. Static, dynamic and active Web documents. Proxy server and pages caching.  |
| **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** | **10** | **Written examination** | **20** |
| **Practical teaching** | **20** | **Oral examination** | **20** |
| **Teaching colloquia** | **30** | **OVERALL SUM** | **100** |
| **\*Final examination mark is formed in accordance with the Institutional documents** |