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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 | Data Communication and Networking |
| Level of study | ☐ Bachelor ☐ Master’s ☐ Doctoral |
| Type of course | ☐ Obligatory ☐ Elective |
| Semester  |  ☐ Autumn ☐ Spring |
| Year of study  | I |
| Number of ECTS allocated | 10 |
| Name of lecturer/lecturers | 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)** |
| The goal of the course is for students to gain understanding and knowledge in the area of data communication and networking with emphasize on: a) advanced concepts and trends in computer-based systems for efficient and high-speed data communication over various communication media; b) wireless ad-hoc and mobile communications, and wireless sensor networks.Upon completing this course, students are expected to have comprehensive understanding of: a) current data networking technologies and trends; b) various data network architectures; c) various data networking protocols and their applications. Students should also be able to compare different data networks and to perform high level design of data networks. |
| **SYLLABUS (brief outline and summary of topics, max. 10 sentences)** |
| Data communications, networks, protocols and standards. Network Models, OSI Model, TCP/IP protocol suite. Physical layer, media and characteristics. Data and signals. Link layer and protocols: error detection and correction, medium access control, flow control, local area networks, Ethernet, IEEE 802.11, Bluetooth. Industrial local area networks. Networking devices. Network layer: addressing, internet protocol, IPv6, routing: unicast, multicast and broadcast routing, intra- and inter-domain routing. Transport layer: UDP and TCP, flow control, congestion control, and quality of service. Application layer: client-server architecture, overview of application protocols. Network management protocols. Multimedia communications: streaming stored audio/video, streaming live audio/video, protocol for multimedia communications. Security: basic principles of cryptography, security services, message confidentiality and integrity, authentication, digital signature, key management. Mobile ad-hoc networks, routing in ad-hoc networks, wireless sensor networks. |
| **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** |  | **Written examination** |  |
| **Practical teaching** | **50** | **Oral examination** | **50** |
| **Teaching colloquia** |  | **OVERALL SUM** | **100** |
| **\*Final examination mark is formed in accordance with the Institutional documents** |