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| **UČNI NAČRT PREDMETA / COURSE SYLLABUS** | | | | | | | | | | | | | | | | | |
| **Predmet:** | | | Programska oprema komunikacijskih sistemov | | | | | | | | | | | | | | |
| **Course title:** | | | Software for communications systems | | | | | | | | | | | | | | |
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| **Študijski program in stopnja**  **Study programme and level** | | | | | **Študijska smer**  **Study field** | | | | | | | | **Letnik**  **Academic year** | | **Semester**  **Semester** | | |
| Podiplomski magistrski študijski program druge stopnje Elektrotehnika | | | | | Telekomunikacije | | | | | | | | 1 | | 1 | | |
| 2nd cycle masters study programme in Electrical Engineering | | | | | Telecommunications | | | | | | | | 1 | | 1 | | |
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| **Vrsta predmeta / Course type** | | | | | | | | | | | | Obvezni-strokovni / Compulsory professional | | | | | |
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| **Univerzitetna koda predmeta / University course code:** | | | | | | | | | | | | 64239S | | | | | |
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| **Predavanja**  **Lectures** | **Seminar**  **Seminar** | | | **Vaje**  **Tutorial** | | | **Klinične vaje**  **work** | | | | **Druge oblike študija** | | | **Samost. delo**  **Individ. work** | |  | **ECTS** |
| **45** |  | | | **30** | | |  | | | |  | | | **75** | |  | **6** |
|  | | | | | | | | | | | | | | | | | |
| **Nosilec predmeta / Lecturer:** | | | | | Urban Sedlar, Andrej Kos | | | | | | | | | | | | |
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| **Jeziki /**  **Languages:** | | **Predavanja / Lectures:** | | | | Slovenščina / Slovenian  Angleški (mentorsko) / English (consultations) | | | | | | | | | | | |
| **Vaje / Tutorial:** | | | | Slovenščina / Slovenian  Angleški (mentorsko) / English (consultations) | | | | | | | | | | | |
| **Pogoji za vključitev v delo oz. za opravljanje študijskih obveznosti:** | | | | | | | | |  | **Prerequisits:** | | | | | | | |
| Vpis v letnik. | | | | | | | | |  | Enrolment in the year of the course. | | | | | | | |
| **Vsebina:** | | | | | | | |  | | **Content (Syllabus outline):** | | | | | | | |
| Operacijski sistemi. Procesi, niti, razvrščanje. Vhodni-izhodne naprave in gonilniki. Hramba podatkov, datoteke, datotečni sistemi.  Medprocesna komunikacija in sinhronizacija. Pomnilnik in upravljanje s pomnilnikom.  Podatkovne baze in transakcije.  Porazdeljeni sistemi.  Virtualizacija in računalništvo v oblaku.  Metode razvoja programske opreme. | | | | | | | |  | | Operating systems. Processes, threads, scheduling. Input-output devices and drivers. Data storage, files, file systems. Inter-process communication and synchronization. Memory and memory management. Databases and transactions. Distributed systems. Virtualization and cloud computing. Software development approaches. | | | | | | | |

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| **Temeljni literatura in viri / Readings:** | | | | | |
| 1. Modern Operating Systems, Andrew S. Tanenbaum, Prentice Hall; 3rd ed (2007) 2. Silberschatz A, Galvin P.B., Gagne G., Operating System Concepts, 7th ed, John Wiley &Son's, New York, 2004, 3. Bic L.F., Shaw A.C, Operating Systems Principles, Prentice Hall, New Jersey, 2003, 4. Benvenuti C., Understanding LINUX Network Internals, O'Reilly, 2005, 5. Članki, objavljenih v revijah, npr. / Articles published in magazines, i.e.: IEEE Communications Surveys & Tutorials, http://www.comsoc.org/livepubs/surveys/index.html | | | | | |
| **Cilji in kompetence:** | |  | | **Objectives and competences:** | |
| Cilj predmeta je podati pregled osnovnih načel delovanja operacijskih sistemov, porazdeljenih sistemov, podatkovnih baz, virtualizacije in načrtovanja programske opreme v komunikacijskih sistemih.  Študenti bodo pridobili potrebna znanja in veščine s teh področij. | |  | | The objective of the course is to provide an overview of the basic principles and workings of operating systems, distributed systems, databases, virtualization and design of software for communication systems.  Students will acquire fundamental knowledge and skills in these fields. | |
| **Predvideni študijski rezultati:** | | |  | **Intended learning outcomes:** | |
| Poznavanje in razumevanje konceptov operacijskih sistemov, porazdeljenih sistemov, podatkovnih baz, virtualizacije in načrtovanja programske opreme komunikacijskih sistemov. | | |  | Knowledge and understanding of the concepts of operating systems, distributed systems, databases, virtualization, and designing of software for communication systems. | |
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| **Metode poučevanja in učenja:** | | |  | **Learning and teaching methods:** | |
| Predavanja, na katerih se študent seznani s teoretičnimi osnovami, ter laboratorijske vaje, kjer probleme spozna tudi praktično in jih v timu rešuje skozi projektno delo. E-izobraževanje. Ogledi in vabljeni predavatelji. | | |  | Lectures for theoretical aspects,  laboratory exercises and team work for real-case scenarios and problem solving through project work. E-learning. Study visits and invited lecturers. | |
| **Načini ocenjevanja:** | Delež (v %) /  Weight (in %) | | | | **Assessment:** |
| Način: pisni izpit, ustni izpit.  Ocene od 1 do vključno 5 so negativne, ocene od vključno 6 do 10 so pozitivne.  Uspešna izvedba 80% laboratorijskih vaj je predpogoj za prijavo na pisni izpit.  Prispevki k oceni:   * pisni izpit * ustni izpit | 50%  50% | | | | Type: written exam, oral exam.  Negative grades: from 1 to 5, positive grades: from 6 to 10.  Successful completion of at least 80% of the laboratory exercises is prerequisite for the written exam.  Contributions to the final grade:   * written exam * oral examination |
| **Reference nosilca / Lecturer's references:** | | | | | |
| 1. SEDLAR, Urban, VOLK, Mojca, STERLE, Janez, SERNEC, Radovan, KOS, Andrej. Contextualized monitoring and root cause discovery in IPTV systems using data visualization. IEEE network, ISSN 0890-8044, Nov.-Dec. 2012, vol. 26, no. 6, str. 40-46. 2. RUGELJ, Miha, SEDLAR, Urban, VOLK, Mojca, STERLE, Janez, HAJDINJAK, Melita, KOS, Andrej. Novel cross-layer QoE-aware radio resource allocation algorithms in multiuser OFDMA systems. IEEE transactions on communications, ISSN 0090-6778. [Print ed.], Sep. 2014, vol. 62, no. 9, str. 3196-3208. 3. SEDLAR, Urban, VOLK, Mojca, STERLE, Janez, SERNEC, Radovan, KOS, Andrej. Contextualized monitoring and root cause discovery in IPTV systems using data visualization. IEEE network, ISSN 0890-8044, Nov.-Dec. 2012, vol. 26, no. 6, str. 40-46. 4. STERLE, Janez, RUGELJ, Miha, SEDLAR, Urban, KORŠIČ, Luka, KOS, Andrej, ZIDAR, Peter, VOLK, Mojca. A novel approach to building a heterogeneous emergency response communication system. International journal of distributed sensor networks, ISSN 1550-1477. [Online ed.], 2015, vol. 2015, str. 1-9. 5. KOS, Andrej, PRISTOV, Damijan, SEDLAR, Urban, STERLE, Janez, VOLK, Mojca, VIDONJA, Tomaž, BAJEC, Marko, BOKAL, Drago, BEŠTER, Janez. Open and scalable IoT platform and its applications for real time access line monitoring and alarm correlation. Lect. notes comput. sci., str. 27-38. | | | | | |