|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **UČNI NAČRT PREDMETA / COURSE SYLLABUS** | | | | | | | | | | | | | | | | | |
| **Predmet:** | | | Komunikacijska elektronika | | | | | | | | | | | | | | |
| **Course title:** | | | Communication electronics | | | | | | | | | | | | | | |
|  | | | | |  | | | | | | | |  | |  | | |
| **Študijski program in stopnja**  **Study programme and level** | | | | | **Študijska smer**  **Study field** | | | | | | | | **Letnik**  **Academic year** | | **Semester**  **Semester** | | |
| Podiplomski magistrski študijski program druge stopnje Elektrotehnika | | | | | Vse smeri | | | | | | | | 2 | | 1 | | |
| 2nd cycle masters study programme in Electrical Engineering | | | | | All study fields | | | | | | | | 2 | | 1 | | |
|  | | | | | | | | | | | | | | | | | |
| **Vrsta predmeta / Course type** | | | | | | | | | | | | Izbirni-splošni /elective general | | | | | |
|  | | | | | | | | | | | |  | | | | | |
| **Univerzitetna koda predmeta / University course code:** | | | | | | | | | | | | 64311 | | | | | |
|  | | | | | | | | | | | | | | | | | |
| **Predavanja**  **Lectures** | **Seminar**  **Seminar** | | | **Vaje**  **Tutorial** | | | **Klinične vaje**  **work** | | | | **Druge oblike študija** | | | **Samost. delo**  **Individ. work** | |  | **ECTS** |
| 45 |  | | | 30 | | |  | | | |  | | | 75 | |  | 6 |
|  | | | | | | | | | | | | | | | | | |
| **Nosilec predmeta / Lecturer:** | | | | | Matej Zajc | | | | | | | | | | | | |
|  | | | | | | | | | | | | | | | | | |
| **Jeziki /**  **Languages:** | | **Predavanja / Lectures:** | | | | slovenski / Slovenian | | | | | | | | | | | |
| **Vaje / Tutorial:** | | | | slovenski / Slovenian | | | | | | | | | | | |
| **Pogoji za vključitev v delo oz. za opravljanje študijskih obveznosti:** | | | | | | | | |  | **Prerequisits:** | | | | | | | |
| Vpis v letnik predmeta | | | | | | | | |  | Enrolment in the year of the course | | | | | | | |
| **Vsebina:** | | | | | | | |  | | **Content (Syllabus outline):** | | | | | | | |
| Analogni gradniki elektronskih komunikacijskih vezij, tehnologije izdelave analognih vezij: ojačevalniki, filtri, analogno/digitalna pretvorba signala. Gradniki digitalnih komunikacijskih vezij: namenski procesorji, programljive arhitekture, periferne enote, tehnologije izdelave digitalnih vezij. Gradniki komunikacijskih sistemov: zajem in obdelava signalov. Uporabniška elektronika in vgrajeni sistemi: optimizacija porabe moči, življenjska doba produkta, optimizacija podsklopov in stopnja integracije ter vpliv na lastnosti vezij in ceno produkta. Telekomunikacijski sistemi: arhitekture komunikacijskih sistemov, strojna in programska oprema. Multimedijski sistemi: arhitekture multimedijskih sistemov, strojna in programska oprema, realizacija algoritmov digitalne obdelave signalov. | | | | | | | |  | | Analog components of electronic communications circuits and manufacturing technologies: amplifiers, filters, analogue/digital signal conversion. Digital components of communications systems: application specific processors, programmable architectures, peripheral units and manufacturing technologies. Components of communication systems: signal acquisition and processing. Consumer electronics and embedded systems: optimized power consumption, product life cycle, sub-system optimization, level of integration and impact on features and costs. Communication systems: architecture of communications systems, hardware and software. Multimedia systems: multimedia systems’ architecture, hardware and software, algorithm design and implementation. | | | | | | | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Temeljni literatura in viri / Readings:** | | | | | |
| 1. 1.T.L.Floyd, Analog Fundamentals: a systems approach, Pearson, 2012. 2. R. Tokheim, Digital electronics: principles and applications, 8th edition, McGraw-Hill, 2013. | | | | | |
| **Cilji in kompetence:** | |  | | **Objectives and competences:** | |
| Predmet poglobi razumevanje realizacije zajema, obdelave in prenosa signalov. Razumevanje delovanja analognih in digitalnih elektronskih vezij, ki se kot gradniki uporabljajo pri realizaciji v telekomunikacijskih in multimedijskih sistemih. Seznanitev s stanjem na področju realizacije komunikacijskih vezij s poudarkom na tehnološki izvedljivosti, ekonomski upravičenosti in tehnoloških trendih. | |  | | The main objective of the course is to deepen the understanding of circuits for signal acquisition, processing and transmission. Understanding of analogue and digital electronic circuits and their application in communication and multimedia systems. Modern communication electronics state of the art, technological and economic feasibility, and technology trends. | |
| **Predvideni študijski rezultati:** | | |  | **Intended learning outcomes:** | |
| Študent se seznani s pomembnejšimi analognimi in digitalnimi gradniki komunikacijske elektronike ter njihove funkcije v komunikacijskih in multimedijskih sistemih. | | |  | Students develop understanding of fundamental analog and digital communication electronics componets and its role in telecommunication and multimedia systems. | |
|  | | |  |  | |
| **Metode poučevanja in učenja:** | | |  | **Learning and teaching methods:** | |
| Predavanja, praktični prikazi, avditorne in laboratorijske vaje ter projektno delo | | |  | Lectures, demonstrations, practical laboratory work and project assignment. | |
| **Načini ocenjevanja:** | Delež (v %) /  Weight (in %) | | | | **Assessment:** |
| Način: laboratorijske vaje, projekt, pisni izpit, ustni izpit.  Ocene od 1 do vključno 5 so negativne, ocene od vključno 6 do 10 so pozitivne.  Pozitivna ocena laboratorijskih vaj in domačih nalog je pogoj za pristop k izpitu.  Prispevki k oceni:  laboratorijske vaje in projekt  pisni izpit  ustni izpit | 25%  50%  25% | | | | Type: laboratory exercises, project, written exam, oral exam.  Negative grades: from 1 to 5, positive grades: from 6 to 10.  Positive evaluation of laboratory exercises and project is a prerequisite for the exam.  Contributions to final grade:  laboratory exercises and project  written exam  oral examination |
| **Reference nosilca / Lecturer's references:** | | | | | |
| 1. PLESNIK, Emil, MALGINA, Olga, TASIČ, Jurij F., ZAJC, Matej. Detection of the electrocardiogram fiducial points in the phase space using the euclidian distance measure. *Med. eng. phys.* May 2012, vol. 34, no. 4, str. 524-529. 2. GOGIĆ, Asmir, MUJČIĆ, Aljo, ZAJC, Matej, SULJANOVIĆ, Nermin. Broadband PLC network cross-layer simulation in accordance with the IEEE P1901 standard. *Elektron. elektrotech.* 2013, vol. 19, no. 5, str. 83-88. 3. GOGIĆ, Asmir, MUJČIĆ, Aljo, HAKKI ÇAVDAR, Ismail, ZAJC, Matej, SULJANOVIĆ, Nermin. Study of MAC routing in the BPLC P1901 access network : fixed vs. adaptive approach. Turkish journal of electrical engineering and computer sciences, 2015, vol. 23, no. 5, str. 1447-1448 4. FINKŠT, Tomaž, TASIČ, Jurij F., TERČELJ-ZORMAN, Marjeta, ZAJC, Matej. Autofluorescence bronchoscopy image processing in the selected colour spaces. *Stroj. vestn.*, sep. 2012, vol. 58, no. 9, str. 501-508. 5. ZAJC, Matej, SULJANOVIĆ, Nermin, MUJČIĆ, Aljo, TASIČ, Jurij F. Frequency characteristics measurement of overhead high-voltage power-line in low radio-frequency range. *IEEE trans. power deliv.* 2007, vol. 22, no. 4, str. 2142-2149. | | | | | |