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| **UČNI NAČRT PREDMETA / COURSE SYLLABUS** | | | | | | | | | | | | | | | | | |
| **Predmet:** | | | Interakcija med človekom in strojem | | | | | | | | | | | | | | |
| **Course title:** | | | Human – machine interaction | | | | | | | | | | | | | | |
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| **Študijski program in stopnja**  **Study programme and level** | | | | | **Študijska smer**  **Study field** | | | | | | | | **Letnik**  **Academic year** | | **Semester**  **Semester** | | |
| doktorski študijski program tretje stopnje Elektrotehnika | | | | | Ni smeri | | | | | | | | 1 | |  | | |
| 3rd cycle: doctoral study programme Electrical Engineering | | | | |  | | | | | | | | **1** | |  | | |
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| **Vrsta predmeta / Course type** | | | | | | | | | | | | Izbirni/elective | | | | | |
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| **Univerzitetna koda predmeta / University course code:** | | | | | | | | | | | | 64878 | | | | | |
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| **Predavanja**  **Lectures** | **Seminar**  **Seminar** | | | **Vaje**  **Tutorial** | | | **Klinične vaje**  **work** | | | | **Druge oblike študija** | | | **Samost. delo**  **Individ. work** | |  | **ECTS** |
| **30** |  | | |  | | |  | | | |  | | | **95** | |  | **5** |
|  | | | | | | | | | | | | | | | | | |
| **Nosilec predmeta / Lecturer:** | | | | | Izr. prof. dr. Jaka Sodnik | | | | | | | | | | | | |
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| **Jeziki /**  **Languages:** | | **Predavanja / Lectures:** | | | | slovenski | | | | | | | | | | | |
| **Vaje / Tutorial:** | | | | slovenski | | | | | | | | | | | |
| **Pogoji za vključitev v delo oz. za opravljanje študijskih obveznosti:** | | | | | | | | |  | **Prerequisits:** | | | | | | | |
| Vpis v letnik študija. | | | | | | | | |  | Enrollment in the study year. | | | | | | | |
| **Vsebina:** | | | | | | | |  | | **Content (Syllabus outline):** | | | | | | | |
| Človeška zaznava in njene omejitve (človeška čutila, spomin in čustva). Uporabniški vmesniki (vizualni, zvočni, taktilni, biometrika, naravni vmesniki). Elementi interakcije (modeli interakcije, trde in mehke kontrole, naravna in naučena interakcija, miselni modeli in metafore, navigacija, kontekst, napake). Postopki načrtovanja uporabniškega vmesnika z upoštevanjem uporabnika (hierarhična analiza nalog, določitev zahtev, izdelava prototipov). Ovrednotenje uporabniškega vmesnika s pomočjo uporabniške študije (metodologija, načrtovanje poskusa, neodvisne in odvisne spremenljivke, objektivna in subjektivna ocene, testne osebe, analiza rezultatov). | | | | | | | |  | | Human perception and its limitations (human senses, memory and emotions). User interfaces (visual, auditory, tactile, biometrics, natural interfaces). Elements of interaction (models of interaction, hard and soft controls, natural and learned interaction, mental models and metaphors, navigation, context and errors). User centred design of user interface (hierarchical tasks analysis, requirements specification, prototyping). Evaluation of user interface through a user study (methodology, experiment design, independent and dependent variables, objective and subjective evaluations, test subjects, analysis of results). | | | | | | | |

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| **Temeljni literatura in viri / Readings:** | | | | | |
| 1. Alan Dix, Janet E. Finlay, Gregory D. Abowd and Russell Beale, Human-Computer Interaction (3rd Edition), Pearson Education Limited, 2004. 2. Scott MacKenzie, Human-Computer Interaction (An Empirical Research Perspective), Elsevier Inc., 2013. 3. Serengul Smith-Atakan, Human-Computer Interaction, Thompson Learning, 2006. | | | | | |
| **Cilji in kompetence:** | |  | | **Objectives and competences:** | |
| Cilj predmeta je razložiti osnove delovanja človeških čutil in omejitev pri zaznavi različnih vrst informacije (vizualna, zvočna, taktilna). Študentje bodo razumeli različne načine interakcije med človekom in strojem in spoznali postopke načrtovanja pripadajočih uporabniških vmesnikov. Sposobni bodo napraviti objektivno in subjektivno oceno novih ali obstoječih uporabniških vmesnikov s pomočjo uporabniških študij in ustrezno analizirati ter predstaviti rezultate teh študij. | |  | | The goal of this course is to explain basic functioning of human senses and its’ limitations in perception of various types of information (visual, auditory, tactile). Students will understand various principles of human-machine interaction and gain knowledge on procedures for user interfaces design. They will be able of objectively and subjectively evaluate new or existing user interfaces through user studies. They will be able to analyze and report the results of these studies. | |
| **Predvideni študijski rezultati:** | | |  | **Intended learning outcomes:** | |
| Poznavanje znanstvenega področja interakcije človek-stroj ter poznavanje postopkov načrtovanja in ocenjevanja različnih vrst uporabniških vmesnikov. | | |  | Knowledge of human-machine interaction scientific field as well as knowledge of procedures for design and evaluation of various types of user interfaces. | |
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| **Metode poučevanja in učenja:** | | |  | **Learning and teaching methods:** | |
| Predavanja s praktičnimi demonstracijami. | | |  | Lectures with practical demonstrations. | |
| **Načini ocenjevanja:** | Delež (v %) /  Weight (in %) | | | | **Assessment:** |
| Ocena temelji na uspešni predstavitvi rezultatov individualnega projektnega dela. | 100% | | | | The assessment is based on the successful presentation of results of individual project work. |
| **Reference nosilca / Lecturer's references:** | | | | | |
| **Book**  Sodnik J, Tomažič S (2015) Spatial auditory human-computer interfaces, SpringerBriefs in computer science, Springer  **Journal articles**  Jakus G, Dicke C, Sodnik J (2015) A user study of auditory, head-up and multi-modal displays in vehicles. Applied Ergonomics 46:184-192  Adhikarla VK, Sodnik J, Szolgay P, Jakus G (2015) Exploring direct 3D interaction for full horizontal parallax light field displays using leap motion controller. Sensors 15(4): 8642-8663  Sodnik J, Jakus G, Tomažič S (2011) Multiple spatial sounds in hierarchical menu navigation for visually impaired computer users. International journal of human-computer studies 69:100-112  Sodnik J, Dicke C, Tomažič S, Billinghurst M (2008) A user study of auditory versus visual interfaces for use while driving. International journal of human-computer studies 66(5):318-332 | | | | | |