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| **UČNI NAČRT PREDMETA / COURSE SYLLABUS** | | | | | | | | | | | | | | | | | |
| **Predmet:** | | | Modul G: Terminalske naprave in uporabniški vmesniki | | | | | | | | | | | | | | |
| **Course title:** | | | Module G: Terminal devices and user interfaces | | | | | | | | | | | | | | |
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| **Študijski program in stopnja**  **Study programme and level** | | | | | **Študijska smer**  **Study field** | | | | | | | | **Letnik**  **Academic year** | | **Semester**  **Semester** | | |
| Univerzitetni študijski program druge stopnje Elektrotehnika | | | | | **Vse smeri** | | | | | | | | **1.** | | **2.** | | |
| 2nd cycle academic study programme Electrical Engineering | | | | | **All fields** | | | | | | | | **1.** | | **2.** | | |
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| **Vrsta predmeta / Course type** | | | | | | | | | | | | Izbirni – strokovni / elective | | | | | |
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| **Univerzitetna koda predmeta / University course code:** | | | | | | | | | | | |  | | | | | |
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| **Predavanja**  **Lectures** | **Seminar**  **Seminar** | | | **Vaje**  **Tutorial** | | | **Klinične vaje**  **work** | | | | **Druge oblike študija** | | | **Samost. delo**  **Individ. work** | |  | **ECTS** |
| 45 | 0 | | | 30 | | | 0 | | | | 0 | | | 75 | |  | 6 |
|  | | | | | | | | | | | | | | | | | |
| **Nosilec predmeta / Lecturer:** | | | | | Jaka Sodnik | | | | | | | | | | | | |
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| **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):** | | | | | | | |
| 1. Komunikacija med človekom in strojem: predstavitev področja in zgodovinski pregled. 2. Človeška zaznava in obdelava informacij: čutila, spomin, razmišljanje, emocije, ergonomija. 3. Lastnosti terminalne opreme: vhodno-izhodne naprave, povezljivost, zgradba, funkcionalnost. 4. Delovanje terminalske opreme: vhodne tehnologije in pripadajoče tehnike, senzorji in biometrika, vizualni vmesniki, zvočni vmesniki, haptični vmesniki, multimedijski vmesniki, vgrajeni sistemi, mobilne naprave. 5. Načrtovanje interakcije človek-stroj: vizualna interakcija, govorna interakcija, večmodalna in mobilna interakcija, interakcija in splet, virtualna okolja. 6. Načrtovanje, razvoj in ovrednotenje uporabniških vmesnikov z upoštevanjem specifičnih omejitev različnih terminalov in zagotavljanje najboljše uporabniške izkušnje. 7. Specifični uporabniški vmesniki in načini interakcije: medicina, vozila in letala, igre, starejši uporabniki, slepi in slabovidni. | | | | | | | |  | | 1. Man-machine communication: overview and historical background. 2. Human perception and information processing: the senses, memory, thinking, emotions and ergonomics. 3. Properties of terminal equipment: input-output devices, connectivity, architecture, functionality. 4. Operation of terminal equipment: input technologies and related techniques, sensors and biometrics, visual interfaces, audio interfaces, haptic interfaces, multimedia interfaces, embedded systems, mobile devices. 5. The design of human-machine interaction: visual interaction, verbal interaction, multi-modal and mobile interaction, interaction and the Web, virtual environments. 6. Design, development and evaluation of user interfaces by taking into account the specific limitations of different terminals and providing the best user experience. 7. Specific user interfaces and interaction styles: medical, vehicles and aircrafts, games, older users, blind and visually impaired. | | | | | | | |

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| **Temeljni literatura in viri / Readings:** | | | | | |
| 1. Russell Beale, Alan J. Dix, Janet E. Finlay, Gregory D. Abowd: Human-computer Interaction, Prentice Hall, (February 1997), 1997, ASIN 0134372115 2. Serengul Smith-Atakan: Human-Computer Interaction, Middlesex University Press, 2006, ISBN-13: 978-184480454-2 3. Human Computer Interaction Handbook: Fundamentals, Evolving Technologies, and Emerging Applications, Edited by Julie A.Jacko, CRC Press, Taylor&Francis Group, 2012, ISBN 978-1-4398-2943-1. | | | | | |
| **Cilji in kompetence:** | |  | | **Objectives and competences:** | |
| Študenti bodo spoznali tehnološke razlike in specifičnosti sodobnih terminalnih naprav in  bodo sposobni načrtati, razviti in ovrednotiti učinkovit in uporabniku prilagojen uporabniški vmesnik. | |  | | Students will gain knowledge on technological differences and specifics of modern terminal devices and will gain the ability to design, develop and evaluate an efficient and user centred user interface. | |
| **Predvideni študijski rezultati:** | | |  | **Intended learning outcomes:** | |
| Poznavanje lastnosti in omejitev terminalne opreme, problemov pri načrtovanju uporabniških vmesnikov ter problemov pri interakciji med človekom in strojem.  Razumevanje osnovnih postopkov in zahtev pri načrtovanju terminalne opreme, uporabniških vmesnikov in prilagodljivih aplikacij. | | |  | Knowledge of the properties and limitations of terminal equipment, issues related to user interface design and problems in human-machine interaction.  Understanding of basic procedures and requirements for terminal equipment design, user interfaces and flexible applications. | |
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| **Metode poučevanja in učenja:** | | |  | **Learning and teaching methods:** | |
| Predavanja s praktičnimi demonstracijami, laboratorijske vaje in izdelava samostojnega projekta pod mentorstvom asistenta. | | |  | Lectures with practical demonstrations, lab work and the implementation of individual project under the mentorship of laboratory assistant. | |
| **Načini ocenjevanja:** | Delež (v %) /  Weight (in %) | | | | **Assessment:** |
| Način: laboratorijske vaje, projekt, ustni izpit.  Ocene od 1 do vključno 5 so negativne, ocene od vključno 6 do 10 so pozitivne.  Pozitivna ocena laboratorijskih vaj in projekta je pogoj za pristop k izpitu.  Prispevki k oceni:  laboratorijske vaje in projekt  ustni izpit | 50%  50% | | | | Type: laboratory exercises, project, 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  oral examination |
| **Reference nosilca / Lecturer's references:** | | | | | |
| 1. SODNIK, Jaka. Uporaba prostorskega zvoka v interakciji človek-stroj : doktorska disertacija. Ljubljana: [J. Sodnik], 2007. 120 str. 2. GUNA, Jože, JAKUS, Grega, POGAČNIK, Matevž, TOMAŽIČ, Sašo, SODNIK, Jaka. An analysis of the precision and reliability of the leap motion sensor and its suitability for static and dynamic tracking. Sensors, ISSN 1424-8220, Feb. 2014, vol. 14, no. 2, str. 3702-3720. 3. DICKE, Christina, JAKUS, Grega, SODNIK, Jaka. Auditory and head-up displays in vehicles. V: KUROSU, Masaaki (ur.). Human-computer interaction : HCI International 2013 : proceedings : 15th International Conference, Las Vegas, NV, USA, July 21-26, 2013. Part 2, Applications and services, (Lecture notes in computer science, ISSN 1611-3349, 8005). Heidelberg [etc.]: Springer, 2013, str. 551-560. 4. SODNIK, Jaka, JAKUS, Grega, TOMAŽIČ, Sašo. The use of spatialized speech in auditory interfaces for computer users who are visually impaired. Journal of visual impairment & blindness, ISSN 0145-482X, Oct.-Nov. 2012, vol. 106, no. 10, str. 634-645. 5. SODNIK, Jaka, JAKUS, Grega, TOMAŽIČ, Sašo. Multiple spatial sounds in hierarchical menu navigation for visually impaired computer users. International journal of human-computer studies, ISSN 1071-5819, Jan.-Feb. 2011, vol. 69, no. 1/2, str. 100-112. 6. SODNIK, Jaka, DICKE, Christina, TOMAŽIČ, Sašo, BILLINGHURST, Mark. A user study of auditory versus visual interfaces for use while driving. International journal of human-computer studies, ISSN 1071-5819, May 2008, vol. 66, no. 5, str. 318-332. | | | | | |