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| **UČNI NAČRT PREDMETA / COURSE SYLLABUS** | | | | | | | | | | | | | | | | | |
| **Predmet:** | | | Inteligentne stavbe | | | | | | | | | | | | | | |
| **Course title:** | | | Intelligent buildings | | | | | | | | | | | | | | |
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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 | | | | |  | | | | | | | |  | |  | | |
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| **Vrsta predmeta / Course type** | | | | | | | | | | | | izbirni/elective | | | | | |
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| **Univerzitetna koda predmeta / University course code:** | | | | | | | | | | | | 64877 | | | | | |
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| **Predavanja**  **Lectures** | **Seminar**  **Seminar** | | | **Vaje**  **Tutorial** | | | **Klinične vaje**  **work** | | | | **Druge oblike študija** | | | **Samost. delo**  **Individ. work** | |  | **ECTS** |
|  | **30** | | |  | | |  | | | |  | | | **95** | |  | **5** |
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| **Nosilec predmeta / Lecturer:** | | | | | izr. prof. dr. Grega Bizjak | | | | | | | | | | | | |
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| **Jeziki /**  **Languages:** | | **Predavanja / Lectures:** | | | | **slovenski ali angleški/Slovenian or English** | | | | | | | | | | | |
| **Vaje / Tutorial:** | | | | **slovenski ali angleški/Slovenian or English** | | | | | | | | | | | |
| **Pogoji za vključitev v delo oz. za opravljanje študijskih obveznosti:** | | | | | | | | |  | **Prerequisits:** | | | | | | | |
| Vpis v program. | | | | | | | | |  | Inscription in program. | | | | | | | |
| **Vsebina:** | | | | | | | |  | | **Content (Syllabus outline):** | | | | | | | |
| Predmet postavlja v središče človeka in njegove potrebe v delovnem in bivalnem okolju. S pomočjo izbranih poglavij s področja avtomatizacije stavb in razsvetljave predstavi načine, kako delo in bivanje v notranjem okolju narediti človeku bolj prijazno, udobno in varno. Pri tem je poseben poudarek dan varnosti in energetski učinkovitosti stavb.  Vsebina je razdeljena v naslednja poglavja:  - Človekove potrebe pri delu in bivanju  - Avtomatizacija stavb  - Inteligentne inštalacije  - Razsvetljava po meri človeka  - Svetleče diode in drugi moderni svetlobni viri  - Uporaba dnevne svetlobe  - Energetsko učinkovite in okolju prijazne "zelene" stavbe  - Meritve in senzorika  - Povezave stavbe z zunanjim svetom | | | | | | | |  | | The course concentrates on humans and their needs in working and living environment. Different ways of making working and living in interiors more friendly, comfortable and safe are presented with the help of selected chapters from building automation and lighting. Special emphasis will be given on safety and energy efficiency of buildings.  Content is divided in the following sections:  - Human needs at work and living  - Building automation  - Intelligent Installation  - Lighting on a human scale  - LEDs and other modern light sources  - Use of daylight  - Energy efficient and environmentally friendly "green" buildings  - Measurements and sensors  - Building connections with the outside world | | | | | | | |

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| **Temeljni literatura in viri / Readings:** | | | | | |
| 1. BIZJAK, Grega, KOBAV, Matej Bernard, PRELOVŠEK, Mitja. Razsvetljava , Založba FE in FRI, 2013.  2. TRÄNKLER, H.-R., SCHNEIDER, F. Das Intelligente Haus, Richard Pflaum Verlag, 2001  3. SCHERG, Rainer. EIB/KNX\_Anlagen, Vogel Buchverlag, 2011  4. LENK, Ron, LENK, Carol. Practical Lighting Design with LED, IEEE Press, 2011  5. VALBERG, Arne. Light Vision Color, John Wiley & Sons, Ltd, 2005  6. ANDER, Gregg D. Daylighting Performance and Design, John Wiley & Sons, Ltd, 2003  7. The IESNA Lighting handbook: reference and application, New York : Illuminating Engineering Society of North America, cop. 2011 ali 2000 | | | | | |
| **Cilji in kompetence:** | |  | | **Objectives and competences:** | |
| Cilj predmeta je seznaniti študente s stanjem na izbranih področjih inteligentnih stavb, ki so trenutno v središču raziskav in razvoja. Študent se bo zavedal pomena in vpliva avtomatizacije delovnega in bivalnega okolja na človeka in njegovo delovanje kot tudi s tem povezanih problemov. Tako bo razvil kritičen odnos do trenutnih tehničnih rešitev na tem področju kar mu bo omogočilo ustvarjalno delo pri raziskavah in razvoju novih izdelkov in rešitev. | |  | | The course aims to acquaint students with the state of the art on selected topics of intelligent buildings, which are currently at the center of research and development. Students will be aware of the importance and impact of building automation on working and living environment of humans and will know its operation as well as the related problems. They will develop a critical attitude towards the current technical solutions in this field which will allow them creative research work and development of new products and solutions. | |
| **Predvideni študijski rezultati:** | | |  | **Intended learning outcomes:** | |
| Študent bo obvladal temeljno znanje na področju inteligentnih stavb, ki ga bo znal povezati z drugimi znanji z različnih področij, ki se ukvarjajo z delovnim in bivalnim okoljem (npr. elektrotehnika, arhitektura, medicina, ergonomija …). Sposoben bo samostojno delati na razvoju ali raziskavah novih konceptov, rešitev in izdelkov za avtomatizacijo stavb. | | |  | Students will obtain basic knowledge in the field of intelligent buildings and will be able to connect this knowledge with other knowledge from different fields dealing with living and working environment (e.g. electrical engineering, architecture, medicine, ergonomics ...). They will be able to work independently on development or research of new concepts, solutions and products for building automation. | |
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| **Metode poučevanja in učenja:** | | |  | **Learning and teaching methods:** | |
| Vodeno seminarsko delo, konzultacije. | | |  | Guided seminar work, consultations. | |
| **Načini ocenjevanja:** | Delež (v %) /  Weight (in %) | | | | **Assessment:** |
| Seminarsko delo  Ustna predstavitev seminarja | **50 %**  **50 %** | | | | Seminar work  Oral presentation of seminar work |
| **Reference nosilca / Lecturer's references:** | | | | | |
| 1. KOBAV, Matej Bernard, BIZJAK, Grega, KLANJŠEK GUNDE, Marta, MALOVRH REBEC, Katja. LED spectra and its photobiological effects. Light & engineering, ISSN 1068-9761, 2013, vol. 21, no. 1, str. 22-27, ilustr. [COBISS.SI-ID 9806676]  2. KOBAV, Matej Bernard, BIZJAK, Grega, DUMORTIER, Dominique. Characterization of sky scanner measurements based on CIE and ISO standard CIE S 011/2003. Lighting research & technology, ISSN 1477-1535. [Print ed.], Aug. 2013, vol. 45, no. 4, str. 504-512, ilustr. http://lrt.sagepub.com/content/45/4/504.full.pdf+html, doi: 10.1177/1477153512458916. [COBISS.SI-ID 9897300]  3. KOBAV, Matej Bernard, BIZJAK, Grega. LED spectra and melatonin suppression action function. Light & engineering, ISSN 1068-9761, 2012, vol. 20, no. 3, str. 15-22, ilustr. [COBISS.SI-ID 9970772]  4. BIZJAK, Grega, KOBAV, Matej Bernard, YLINEN, Anne-Mari, PUOLAKKA, Marjukka, HALONEN, Liisa. How energy efficient is road lighting practice in Slovenia. Light & engineering, ISSN 1068-9761, 2012, vol. 20, no. 3, str. 82-88, ilustr. [COBISS.SI-ID 9970516]  5. KOBAV, Matej Bernard, BIZJAK, Grega. Sky luminance models. V: BECKERS, Benoit (ur.). Solar energy at urban scale. London: ISTE; Hoboken: Wiley, cop. 2012, str. 37-56, ilustr. [COBISS.SI-ID 9261908] | | | | | |