Univerza v Mariboru

Fakulteta za naravoslovje in matematiko

UČNI NAČRT PREDMETA / COURSE SYLLABUS	
Predmet:	**Informacijsko komunikacijska tehnologija**
Course title:	Information and communications technology

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Enovit magistrski študijski program druge stopnje Predmetni učitelj	/	1	1
Five-year master's degree program Subject Teacher	/		

Vrsta predmeta / Course type	Obvezni / Obligatory
Univerzitetna koda predmeta / University course code:	

Predavanja Lectures	Seminar Seminar	Sem. vaje Tutorial	Lab. vaje Laboratory work	Teren. vaje Field work	Samost. delo Individ. work	ECTS
30			30		60	4

Nosilec predmeta / Lecturer:	dr. Igor Pesek

Jeziki / Languages:	**Predavanja / Lectures:**	slovenščina / Slovenian
	Vaje / Tutorial:	slovenščina / Slovenian

Pogoji za vključitev v delo oz. za opravljanje študijskih obveznosti:	Prerequisits:

Vsebina:	Content (Syllabus outline):
• Pedagoške in tehnološke osnove IKT. • Kibernetika, teorija sistemov, informatika, osnove teorije informacij in komunikacij. Računalniški sistemi. Strojna in programska oprema. • Uporaba IKT v izobraževanju in izobraževalni informacijski sistemi. Pregled	• Teaching and technological bases of ICT. • Cybernetics, theory of systems, information science, bases of theory of information and communications. Computer systems. Hardware and software. • Use of ICT in education and educational information systems. State and trends review

stanja in trendov uporabe IKT v SLO in v svetu. Modeli uporabe IKT v izobraževanju. Strategije uporabe IKT v izobraževanju. • Multimedijski in hipermedijski sistemi. Standardi in normativi. • Izobraževalna omrežja – izobraževalni internet. Video na zahtevo. Učenje na daljavo. Spletna razvojna orodja. • Planiranje in evalvacija uporabe IKT v izobraževanju. • Digitalne kompetence • Informacijska pismenost • Spletna varnost	of use ICT in SLO and world. • ICT models in education. ICT strategies in education. • Multimedia and hypermedia systems. Standards and norms. • Educational networks – educational Internet.. Video on demand. Distance learning. Web development tools. • Planning and evaluation of ICT use in education. • Digital competences • Information literacy • Internet security

Temeljni literatura in viri / Readings:

- I. Gerlič: Sodobna informacijska tehnologija v izobraževanju, Ljubljana , DZS, 2000.
- D. Soleša, M. Černetič, I. Gerlič: New media in education. Univerza Novi Sad – Univerza Maribor, 2007.
- O naravi učenja, Uporaba raziskav za navdih prakse, Pariz in Ljubljana, OECD in ZRSŠ, 2013
- Ruth C. Clark, Richard E. Mayer, E-learning and the science of instruction : proven guidelines for consumers and designers of multimedia learning, John Wiley & Sons, 2011
- Catlin R Tucker; Tiffany Wycoff; Jason T Green, Blended learning in action : a practical guide toward sustainable change, Thousand Oaks, 2017
- S. Carliner, P. Shank, The e-learning handbook : past promises, present challenges, John Wiley & Sons, 2008

Cilji in kompetence:	**Objectives and competences:**
• Poglobljeno teoretično in praktično znanje s področja uporabe IKT v izobraževanju in stroki, • poglobljeno znanje IKT standardov, • razviti sposobnosti študentov za samostojno in kreativno reševanje praktičnih problemov v izobraževanju z uporabo IKT. Poučevanje in učenje potekata z didaktično uporabo informacijsko-komunikacijske tehnologije.	• Deep theoretical and practical knowledge of using ICT in education and profession, • deep knowledge of ICT standards and data distributions, • ability to creatively solve problems in education with ICT. Teaching and learning is done with didactical use od ICT.

Predvideni študijski rezultati:	**Intended learning outcomes:**
• demonstrirati poznavanje teoretičnega in praktičnega ozadja IKT naprav, • analizirati in ovrednotiti prednosti in slabosti uporabe IKT orodij v izobraževanju, • uporabiti različna orodja za izdelavo kakovostnih e-gradiv, • opisati in klasificirati digitalne kompetence	• demonstrate knowledge of theoretical and practical background of ICT, • analyze and evaluate advantages and disadvantages of ICT in education, • using different ICT tools for development of quality e-materials, • describe and classify digital competences

• pojasniti in uporabiti osnovne koncepte informacijske pismenosti • obravnavati različne vidike spletne varnosti	• explain and apply basic concepts of information literacy • consider different aspects of Internet safety.

Metode poučevanja in učenja:	**Learning and teaching methods:**
• Predavanja • Laboratorijske vaje • Individualno delo	• Lectures • Laboratory exercises • Individual work

Načini ocenjevanja:	Delež (v %) / Weight (in %)	**Assessment:**
Teoretični del: • pisni izpit. *Praktični del:* Portfolio z digitalnimi izdelki	50 %, 50 %	*Theoretical part:* • written exam. *Practical part:* • Portfolio with digital work

Reference nosilca / Lecturer's references:

1. FLOGIE, Andrej, ABERŠEK, Boris, KORDIGEL ABERŠEK, Metka, SÍK LÁNYI, Cecília, PESEK, Igor. Development and evaluation of intelligent serious games for children with learning difficulties : observational study. *JMIR serious games : Elektronski vir*. 2020, vol. 8, no. 2, str. 1-16, ilustr. ISSN 2291-9279. DOI: 10.2196/13190. [COBISS.SI-ID 13487363]
2. TOMIĆ, Maja Katarina, ABERŠEK, Boris, PESEK, Igor. GeoGebra as a spatial skills training tool among science, technology engineering and mathematics students. *Computer applications in engineering education*. [Online ed.]. 2019, vol. 27, iss. 6, str. 1506-1517. ISSN 1099-0542. DOI: 10.1002/cae.22165. [COBISS.SI-ID 24744712]
3. WEIGEND, Michael, VANÍČEK, Jiři, PLUHÁR, Zsuzsa, PESEK, Igor. Computational thinking education through creative unplugged activities. *Olympiads in informatics*. 2019, vol. 13, str. 171-192. ISSN 1822-7732. DOI: 10.15388/ioi.2019.11. [COBISS.SI-ID 24747016]
4. FLOGIE, Andrej, ABERŠEK, Boris, PESEK, Igor. The impact of innovative learning environments on social competences of youth. *Research in learning technology*. 2019, vol. 27, str. 1-14. ISSN 2156-7069. DOI: 10.25304/rlt.v27.2214. [COBISS.SI-ID 24743944]
5. ŠORGO, Andrej, DOJER, Brina, GOLOB, Nika, REPNIK, Robert, REPOLUSK, Samo, PESEK, Igor, PLOJ VIRTIČ, Mateja, ŠPERNJAK, Andreja, ŠPUR, Natalija. Opinions about STEM content and classroom experiences as predictors of upper secondary school students' career aspirations to become researchers or teachers. *Journal of research in science teaching*. Dec. 2018, vol. 55, iss. 10, str. 1448-1468, ilustr. ISSN 0022-4308. DOI: 10.1002/tea.21462. [COBISS.SI-ID 23839240]
6. ŠVERC, Alenka, PESEK, Igor, FLOGIE, Andrej. The challenges of complete informatization of education. V: LAMANAUSKAS, Vincentas (ur.). *Philosophy of mind and cognitive modelling in education - 2014*. Siauliai: Scientific Methodological Center Scientia Educologica, 2014. Str. 121-131, ilustr. Problems of education in the 21st century, vol. 61. ISSN 1822-7864.
7. MUSIL, Bojan, GARTNER, Smiljana, PESEK, Igor, KRAŠNA, Marjan. ICT competences assessment through ICT escape room. V: SKALA, Karolj (ur.). *MIPRO 2019 : 42nd International*

Convention, May 20 -24, 2019, Opatija, Croatia : proceedings. Rijeka: Croatian Society for Information and Communication Technology, Electronics and Microelectronics - MIPRO, 2019. Str. 730-734, ilustr. MIPRO ... (CD-ROM). ISSN 1847-3946.
8. REPNIK, Robert, ROBIČ, Dominik, PESEK, Igor. Physics learning in primary and secondary schools with computer games : an example - Angry birds. V: GRADINAROVA, Boyka (ur.). *E-learning : instructional design, organizational strategy and management*. Rijeka: InTech, 2015. Str. 203-225, ilustr. ISBN 978-953-51-2188-6.