



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 / Compulsory

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:

Vsaka izmed naštetih obveznosti v načinih ocenjevanja mora biti opravljena s pozitivno oceno.

Pozitivni oceni pri porfoliu in vajah so pogoj za pristop k pisnemu izpitu.

Prerequisites:

Each of the mentioned commitments must be assessed with a passing grade.

Passing grade of the Portfolio and coursework are required for taking the written exam.

Vsebina:

- 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 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

Content (Syllabus outline):

- 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 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.
- 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
- DigComp 2.2, dostopno na <https://www.zrss.si/wp-content/uploads/2023/08/DigComp-2-2-Okvir-digitalnih-kompetenc.pdf>
- DigCompEdu, dostopno na <https://www.zrss.si/pdf/digcompedu.pdf>

Cilji in kompetence:

- Poglobljeno teoretično in praktično znanje s področja uporabe IKT v izobraževanju in stroki,
- poglobljeno znanje okvirjev digitalnih kompetenc, kot so DigComp 2.2. in DigCompEdu,
- razviti sposobnosti študentov za samostojno in kreativno reševanje praktičnih problemov

Objectives and competences:

- Deep theoretical and practical knowledge of using ICT in education and profession,
- deep knowledge of digital competence frameworks, e.g DigComp 2.2 and DigCompEdu,
- ability to creatively solve problems in education with ICT.

v izobraževanju z uporabo IKT.

Poučevanje in učenje potekata z didaktično uporabo informacijsko-komunikacijske tehnologije.

Teaching and learning is done with didactical use of ICT.

Predvideni študijski rezultati:

- 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
- pojasniti in uporabiti osnovne koncepte informacijske pismenosti
- obravnavati različne vidike spletne varnosti

Intended learning outcomes:

- 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
- explain and apply basic concepts of information literacy
- consider different aspects of Internet safety.

Metode poučevanja in učenja:

- Predavanja
- Laboratorijske vaje
- Individualno delo

Learning and teaching methods:

- Lectures
- Laboratory exercises
- Individual work

Načini ocenjevanja:

Delež (v %) /
Weight (in %)

Assessment:

<i>Znanje:</i> pisni izpit.	50 %,	<i>Knowledge:</i> written exam.
<i>Izdelki:</i> Portfolio	50 %	<i>Outputs:</i> Portfolio

Opombe:

Portfolio naloge obsegajo od 3 do 5 izdelkov na semester.

Comments:

Portfolio consists of 3 to 6 tasks per semester.

Reference nosilca / Lecturer's references:

1. VEBER, Matej, PESEK, Igor, ABERŠEK, Boris. Assessment of supporting visual learning technologies in the immersive VET cyber-physical learning model. *Education sciences*. 2023, vol. 13, iss. 6, [article no.] 608, 19 str., ilustr. ISSN 2227-7102. <https://www.mdpi.com/2227-7102/13/6/608>, Digitalna knjižnica Univerze v Mariboru – DKUM, DOI: [10.3390/educsci13060608](https://doi.org/10.3390/educsci13060608), DOI: [20.500.12556/DKUM-87405](https://doi.org/10.500.12556/DKUM-87405). [COBISS.SI-ID [155720451](https://cobiss.si/id/155720451)]
2. VEBER, Matej, PESEK, Igor, ABERŠEK, Boris. Implementation of the modern immersive learning model CPLM. *Applied sciences*. 2022, vol. 12, iss. 6, 17 str. ISSN 2076-3417. [Digitalna knjižnica](#)

[Univerze v Mariboru – DKUM](#), DOI: [10.3390/app12063090](#). [COBISS.SI-ID [102763523](#)]

3. 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](#)]

4. 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, Jiří, 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/loi.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 VIRTIC, 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. 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.

7. 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.