Univerza v Mariboru

Fakulteta za naravoslovje in matematiko

UČNI NAČRT PREDMETA / COURSE SYLLABUS	
Predmet:	E-učenje
Course title:	E-learning

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Izobraževalna matematika, enopredmetni študij, 2. stopnja		1 ali 2	2 ali 4
Educational mathematics - single-major, 2nd degree		1 or 2	2 or 4

Vrsta predmeta / Course type Izbirni / Elective

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
15	15		15		45	3

Nosilec predmeta / Lecturer: Igor Pesek

Jeziki / Languages:	**Predavanja / Lectures:**	SLOVENSKO/SLOVENE
	Vaje / Tutorial:	SLOVENSKO/SLOVENE

Pogoji za vključitev v delo oz. za opravljanje študijskih obveznosti:	**Prerequisits:**
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.	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:	**Content (Syllabus outline):**
• Zgodovinsko ozadje in trenutni trendi v e-učenju • Koncepti in primeri dobrih praks uspešnega e-učenja • Teorija in principi e-učenja • sistemi učnega okolja • Kombinirano učenje • Digitalni učni viri in uporaba pri pouku	• Historical background and current trends in elearning. • Concepts and foundations of best practices for successful teaching online. • E-learning theory, principles, • Blended learning • Digital learning materials and teaching with digital educational content

• sistemi upravljanja učenja in spletna orodja • uporaba umetne inteligence v izobraževanju	• learning management systems, and web-based technology tools. • Uses of artificial intelligence in education

Temeljni literatura in viri / Readings:

- Gerlič. I, Sodobna informacijska tehnologija v izobraževanju. DZS, Ljubljana, 2000.
- 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
- William Kendall Horton, E-learning by design, John Wiley & Sons, 2006
- S. Carliner, P. Shank, The e-learning handbook : past promises, present challenges, John Wiley & Sons, 2008
- Ruth C. Clark und Richard E. Mayer, e-Learning and the Science of Instruction: Proven Guidelines for Consumers and Designers of Multimedia Learning, Wiley, 2016
- Catlin R Tucker; Tiffany Wycoff; Jason T Green, Blended learning in action : a practical guide toward sustainable change, Thousand Oaks, 2017
- 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
- European Commission: Directorate-General for Education, Youth, Sport and Culture, Blended learning for high quality and inclusive primary and secondary education – Handbook, Publications Office of the European Union, 2021, https://data.europa.eu/doi/10.2766/237842

Cilji in kompetence:	**Objectives and competences:**
• seznaniti se s teoretičnimi izhodišči, učnimi tehnikami in tehnologijami, • izbere in uporabi metode e-učenja v različnih učnih situacijah • uporabljati in upravljati spletna učna okolja • analizirati osnovne principe e-gradiv • primerjati orodja za izdelavo e-gradiv • ovrednotiti različne e-učbenike • prepoznati koristne novejše tehnologije s področa e-učenja • seznaniti se z osnovnimi koncepti umetne inteligence in uporabe UI v izobraževanju	• Basic introduction to online teaching and learning techniques and technologies. • select and use of e-learning methods in a variety of learning settings; • Use and manage online learning environments • analyze principles of e-learning materials • compare the authoring tools for preparation of e-learning materials • evaluate different e-textbooks • recognize useful new technologies and trends in e-learning • basic introduction to Artificial intelligence and its uses in education

Predvideni študijski rezultati:	**Intended learning outcomes:**
Znanje in razumevanje: • Strokovno-teoretično ozadje s področja e-učenja • Prednosti in slabosti uporabe e-izobraževanja	Knowledge and Understanding: • Theoretical background of a e-learning. • Advantages and disadvantages of using e-materials. • Organization of knowledge distributions and

• Organizacija distribucije in prenosa znanja Prenesljive/ključne spretnosti in drugi atributi: • Uporaba znanj pri izdelavi kakovostnih e-učnih gradiv • Organiziranje in vodenje projektov za izdelavo e-učnih gradiv • Priprava pouka v spletnih učilnicah	knowledge transmission. Transferable/Key Skills and other attributes: • Knowledge for development of quality e-learning materials. • Organizing and manage projects for produce e-learning materials. • Preparation of classes in online classrooms

Metode poučevanja in učenja:	**Learning and teaching methods:**
• Predavanja • Laboratorijske vaje • Individualno delo Poučevanje in učenje potekata z didaktično uporabo informacijsko-komunikacijske tehnologije.	• Predavanja • Laboratorijske vaje • Individualno delo Teaching and learning is done with didactical use od ICT.

Načini ocenjevanja:		**Assessment:**
pisni izpit. Portfolio	Delež (v %) / Weight (in %) 50% 50%	written exam. Portfolio

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, DOI: 20.500.12556/DKUM-87405. [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, 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. 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.