



Univerza v Mariboru

Fakulteta za naravoslovje
in matematiko

UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet:	Didaktični praktikum
Course title:	Didactical practical course

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	/	3	6
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
15			30		105	150/5

Nosilec predmeta / Lecturer:

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.

Prerequisites:

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

Vsebina:

Osnove varnega in didaktično ustreznega laboratorijskega dela v osnovni in srednji šoli. Specifike samostojnega in skupinskega praktičnega dela. Energetsko učinkovita opremljenost računalniškega kabineta in učilnice v osnovni in srednji šoli, ergonomska in varnostna pravila. Trajnostna uporaba in vzdrževanje opreme s poudarkom na pravilni rabi in vzdrževanju opreme.

Content (Syllabus outline):

Basics of safe and didactical adequate laboratory work in primary and secondary school. Specifics of a autonomous and group practical work. Energy-efficient equipment of computer cabinet and classrooms in primary and secondary school, ergonomically and safety rules. Sustainable use and maintenance of equipment, emphasizing correct usage and upkeep procedures.

Ergonomija šolskega računalniškega delovnega mesta. - izvedba demonstracijskega, skupinskega in samostojnega domačega (projektne) praktičnega dela na primerih iz učnega načrta in potrjenih učbenikih za osnovno in srednjo šolo - problemska zasnovanost praktičnega dela, vloga podpornih materialov in aktivnosti pri tem (navodila za delo, navodila za uporabo pripomočkov, učni, delovni in informacijski listi, razlaga in razgovor...) - pisno in verbalno poročanje o rezultatih - razvoj različnih taksonomskih globin znanj ob pripravi in izvajanju praktičnega dela - učila in učni pripomočki - uporaba vmesnikov (AD, DA), senzorjev, krmilnikov (robotika) druge IKT in multimedijske opreme pri praktičnem delu v osnovni in srednji šoli - sistemska in uporabniška programska oprema pomembna za delo v osnovni in srednji šoli - strojna oprema (uporaba, osnove servisiranja in vzdrževanja) v osnovni in srednji šoli - spletne tehnologije v izobraževanju (SW, HW..).	Ergonomics of school computer workplace. - Implementation of a demonstrational, group and autonomous (project) practical work on cases in primary and secondary curriculum and approved textbooks. - Problem-based practical work, the role of supporting materials and activities (work instructions, instructions for use of devices, learning-, information- and worksheets, interpretation and discussion...) - The role of the preparations of exercises, the division of labor work within the group - Written and verbal reporting of results - Development of different taxonomical depths of knowledge in preparation and implementation of practical work - Teaching aids and teaching resources. - Use of computer interfaces (AD, DA), sensors, control interfaces (robotics) and other ICT and multimedia equipment in the practical work in primary and secondary schools - System and user SW important for primary and secondary schools. - HW (use, service and support) in primary and secondary schools. - WEB oriented technologies in education (SW, HW..)
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Temeljni literatura in viri / Readings:

- Hazzan, O., Lapidot, T., Ragonis, N., Guide to Teaching Computer Science, Springer, 2011
- Modrow, E., & Strecker, K. (2016). Didaktik der Informatik (str. XI, 240). De Gruyter Oldenbourg.
- Hubwieser, P. (2007). Didaktik der Informatik: Grundlagen, Konzepte, Beispiele: mit 91 Abbildungen und 68 Tabellen (3., überarbeitete und erweiterte Aufl., str. XVII, 286). Springer.
- O naravi učenja, Uporaba raziskav za navdih prakse, Pariz in Ljubljana, OECD in ZRSŠ, 2013
- B. Marentič Požarnik, *Psihologija učenja in pouka*, DZS, 2010.
- Blažič, M., Ivanuš Grmek, M., Kramar, M., Strmčnik, F. (2003). Didaktika. Visokošolski učbenik. Novo mesto: Visokošolsko središče, Inštitut za raziskovalno in razvojno delo.
- Gerlič. I. Sodobna informacijska tehnologija v izobraževanju. DZS, Ljubljana, 2000.
- Veljavni predmetniki, učni načrti, učbeniki, delovni zvezki, didaktični kompleti in ostalo didaktično gradivo za pouk računalništva v osnovnih šolah./syllabuses, learning plans, textbooks, didactic materials for teaching in primary schools

Cilji in kompetence:

- poglobljeno teoretično in praktično znanje izvajanja praktičnega pouka računalništva
- Razvoj kompetenc bodočih učiteljev računalništva za pripravo, izvedbo in analizo projektna dela

Objectives and competences:

- Deep theoretical and practical knowledge on implementation of practical CS classroom
- development of competences of preservice teachers to prepare, execute and analyse project based work

Predvideni študijski rezultati:

- Uporabijo znanja iz didaktike računalništva pri izvedbi praktičnega pouka
- Analizirajo izvedbo praktičnega pouka računalništva
- vrednotijo izdelke pri pouku računalništva
- načrtujejo izvedbo praktičnega pouka
- načrtujejo, izvedejo in analizirajo problemski pouk pri računalništvu
- primerjajo in vrednotijo različne oblike praktičnega pouka
- organizirajo in vrednotijo projektno delo pri pouku računalništva

Intended learning outcomes:

- to use knowledge from CS didactics in practical CS classroom
- to analyze practical CS classroom
- asses pupils work in practical CS
- plan how to implement a practical CS classroom
- plan, implement and analyze problem based CS classroom
- analyze and evaluate different forms of practical CS classroom implementation
- organize and evaluate project work in CS classroom

Metode poučevanja in učenja:

Predavanja - seminar
Samostojno in vodeno praktično delo
Problemsko učenje
Računalniške simulacije
Uporaba IKT in druge multimedijske vsebine
Spletne tehnologije v izobraževanju

Learning and teaching methods:

Lectures - seminar
Autonomous and guided practical work
Problem-based learning
Computer Simulations
Utilization of ICT and Other Multimedia Content
Web Technologies in Education

Načini ocenjevanja:

Delež (v %) /
Weight (in %)

Assessment:

- Portfolio
- Računalniško delo

70%
30%

- portfolio
- computer skills

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/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](https://doi.org/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](https://doi.org/10.2196/13190). [COBISS.SI-ID [13487363](#)]

4. TOMIČ, 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](https://doi.org/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](https://doi.org/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](https://doi.org/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](https://doi.org/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.