

UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet:	Osnove tehnike in tehnologije
Course title:	Base for science and technology

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Enovit magistrski študijski program Predmetni učitelj 2. stopnje	/	1	Zimski/ Winter
Five-year master's degree program Subject Teacher	/		Poletni/ Summer

Vrsta predmeta / Course type Izbirni / Elective

Univerzitetna koda predmeta / University course code:

Predavanja Lectures	Seminar Seminar	Vaje Tutorial	Lab. vaje Laboratory work	Terenske vaje Field work	Samost. delo Individ. work	ECTS
15	5		55		105	6

Nosilec predmeta / Lecturer: Andrej Flogie

Jeziki /	Predavanja / Lectures:	slovenski / slovene
Languages:	Vaje / Tutorial:	slovenski / slovene

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

Ni posebnih pogojev

Prerequisites:

No special prerequisites.

Vsebina:

Predavanja:

- Filozofija in etika tehnologije;
- kratka zgodovina časa in tehnološkega prostora – od kamnite sekire do humanoidnih robotov in potovanj v vesolje;
- osnove znanosti in tehnologij ;
- razvoj proizvodnih tehnologij in njihov vpliv na spremembe človeka v družbi;
- načrtovanje, priprava in upravljanje življenaj in proizvodnje v njem;
- gradiva: življenjski krog gradiv s poudarkom na reciklaži in varstvu okolja;

Content (Syllabus outline):

Lectures:

- Philosophy and ethic of technology;
- short history of time and technological space – from stone ax to humanoid robots and space travel;
- base of science and technologies;
- development of production technologies and their influence on the changes of human behaviour and human society.
- planning and management of life and production in it;
- materials: life cycle of materials, recycling and environment protection;

Vaje in seminar:

- Ogled različnih sodobnih računalniško podprtih tehnologij (CAD/CAM tehnologij) ;
- seminar aplikativno dopolnjuje vsebino predavanj z reševanjem praktičnih problemov.

Tutorials and seminar:

- Excursion in different contemporary computer supported technologies (CAD/CAM technologies robots);
- seminar work supplements the lectures .

Temeljna literatura in viri / Readings:

- Aberšek, B., Tehnologija in obdelava gradiv, Didakta, Radovlica, 1995
- Flogie, A., Aberšek, B. Transdisciplinary approach of science, technology, engineering and mathematics education. Journal of Baltic science education. 2015, vol. 14, no. 6, str. 779-790. ISSN 1648-3898.
- Copeland, J.(1993/2007) Artificial Intelligence: A philosophical Introduction, Blackwell Publishing
- Bermúdez, J. J. (2010) Cognitive Science, Cambridge University Press, Cambridge
- Aberšek, B., Borstner, B., Bregant, J. (2014) Cognitive educator at the edge of the Chaos, Cambridge Scholar Press
- Okasha, S. Filozofija znanosti, Založba Krtina, Ljubljana, 2008

Cilji in kompetence:

- Analizirati znanstveni in tehnološki napredek skozi čas in njegov vpliv na razvoj družbe;
- podati teoretično znanje s področja vrednotenja in izbire posameznih gradiv in tehnologij;
- podati teoretično znanje s področja vrednotenja in izbire obdelovalnih tehnologij;
- prikazati praktično uporabo predhodno pridobljenih teoretičnih znanj na praktičnih primerih;
- spodbujanje študentov k kreativnemu in samostojnemu razmišljanju.

Objectives and competences:

- To analyse science and technological development and their influence on the society through the time;
- to provide theoretical knowledge from area of assessment and selection of contemporary materials and production technologies;
- to provide theoretical knowledge about selecting appropriate technologies for product development;
- to demonstrate practical use of previously accumulated theoretical knowledge on the practical examples.
- to encourage the students to creative and independent thinking.

Predvideni študijski rezultati:**Znanje in razumevanje:**

- poznavanje splošnih napotkov in pravil za izbiro gradiv in ustreznih obdelovalnih tehnologij;
- poznavanje načinov za učinkovito načrtovanje;

Intended learning outcomes:**Knowledge and understanding:**

- general knowledge and rules for selecting materials and suitable production technologies;
- knowledges for effective planning;

- poznavanje splošnih kriterijev za izbiro gradiv in ustreznih tehnologij;
- poznavanje metod in smernic za tehnološki razvoj izdelka;
- razumevanje sovisnosti različnih znanj in postopkov pri reševanje praktičnih problemov.

Prenesljive/ključne spretnosti in drugi atributi:

- uporaba informacijske tehnologije: uporaba orodij za izdelavo in oblikovanje;
- reševanje problemov: ocenjevanje obstoječih in lastnih tehnoloških rešitev;
- kombinirana analiza in uporaba različnih znanj za reševanje praktičnih problemov;
- načrtovanje tehnologije za izdelavo izdelka z uporabo sodobnih metod.

- knowledge of general criteria for selecting materials and adequate production technologies;
- knowledge, methods and guidelines for technological product development;
- understanding of relationships between different skills and procedures for solving practical problems.

Transferable/Key Skills and other attributes:

- use of information technology: use of tools for creating and designing technological process;
- problem solving: evaluation of existing and proper program solutions;
- combined analyse and use of different skills for solution of practical problems;
- design of technological process using advanced approaches.

Metode poučevanja in učenja:

- frontalna predavanja, skupinsko delo;
- izdelava seminarske naloge,
- diskusije v elektronskem forumu, e-učenje.

Learning and teaching methods:

- frontal lectures, work in groups;
- seminar work,
- discussions in e-forum, e-learning

Delež (v %) /

Načini ocenjevanja:

Weight (in %)

Assessment:

Način (pisni izpit, ustno izpraševanje, naloge, projekt):	Delež (v %) / Weight (in %)	Type (examination, oral, coursework, project):
<ul style="list-style-type: none"> • diskusije v e - forumu, • seminarske naloga, • pisni izpit, • ustni izpit. 	<p>20 %</p> <p>40 %</p> <p>20 %</p> <p>20 %</p>	<ul style="list-style-type: none"> • discussion in electronic forums, • seminar works, • written examination, • oral examination.

Reference nosilca / Lecturer's references:

- FLOGIE, Andrej, BARLE LAKOTA, Andreja, ABERŠEK, Boris. The psychosocial and cognitive influence of ICT on competences of STEM students. *Journal of Baltic science education*. 2018, vol. 17, no. 2, str. 267-276, tabele. ISSN 1648-3898. [COBISS.SI-ID [23819528](#)], [JCR, SNIP, WoS do 27. 5. 2021: št. citatov (TC): 11, čistih citatov (CI): 9, čistih citatov na avtorja (CIAu): 3,00, Scopus do 30. 6. 2023: št. citatov (TC): 18, čistih citatov (CI): 15, čistih citatov na avtorja (CIAu): 5,00]
- ABERŠEK, Boris, FLOGIE, Andrej. *Human awareness, energy and environmental attitudes*. Cham: Springer, 2022. XVIII, 241 str., ilustr. ISBN 978-3-031-05870-7, ISBN 978-3-031-05871-4. DOI: [10.1007/978-3-031-05871-4](#). [COBISS.SI-ID [115083779](#)]
- LIPOVEC, Alenka, FLOGIE, Andrej. Empowering future teachers : unveiling their attitudes and knowledge about AI in Slovenian K-12 education. V: *2023 12th Mediterranean Conference on Embedded Computing (MECO), 6-10 June 2023*. 2023 12th Mediterranean Conference on Embedded

Computing (MECO), 6-10 June 2023, Budva, Montenegro. [S. l.]: IEEE, cop. 2023. Str. 1-4, tabele, graf. prikazi. ISBN 979-8-3503-2291-

0. <https://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=10155010>, DOI: [10.1109/MECO58584.2023.10155010](https://doi.org/10.1109/MECO58584.2023.10155010). [COBISS.SI-ID [159824131](#)], [Scopus do 27. 7. 2023: št. citatov (TC): 1, čistih citatov (CI): 1, čistih citatov na avtorja (CIAu): 0,50]

- KLEMENČIČ, Eva, FLOGIE, Andrej, REPNIK, Robert. Science education in Slovenia. V: HUANG, Ronghuai (ur.). *Science education in countries along the belt & road : future insights and new requirements*. Singapore: Springer, cop. 2022. Str. 471-485. Lecture notes in educational technology (Internet). ISBN 978-981-16-6954-5, ISBN 978-981-16-6955-2. ISSN 2196-4971. DOI: [10.1007/978-981-16-6955-2_28](https://doi.org/10.1007/978-981-16-6955-2_28). [COBISS.SI-ID [104126979](#)], [Scopus]
- PLAVEC, Kristina, KERNEŽA, Maja, ABERŠEK, Boris, FLOGIE, Andrej. Management of evaluation and assessment processes in lower secondary schools in Slovenia. *International journal of management in education*. 2019, vol. 13, no. 3, str. 218-233. ISSN 1750-385X. [COBISS.SI-ID [24459528](#)], [SNIP, Scopus do 22. 2. 2022: št. citatov (TC): 3, čistih citatov (CI): 3, čistih citatov na avtorja (CIAu): 0,75]