

**UČNI NAČRT PREDMETA / COURSE SYLLABUS**

<b>Predmet:</b>	Tehnologije digitalne transformacije
<b>Course title:</b>	Digital transformation technologies

<b>Študijski program in stopnja</b> Study programme and level	<b>Študijska smer</b> Study field	<b>Letnik</b> Academic year	<b>Semester</b> Semester
Poslovna informatika, magistrski študijski program druge stopnje	-	Drugi	Tretji
The second cycle masters study programme Business Informatics	-	Second	Third

**Vrsta predmeta / Course type**

Obvezni / Obligatory

**Univerzitetna koda predmeta / University course code:**

4-PI-MAG-TDT-2022-05-27

<b>Predavanja</b> Lectures	<b>Seminar</b> Seminar	<b>Vaje</b> Tutorial	<b>Klinične vaje</b> work	<b>Druge oblike študija</b>	<b>Samost. delo</b> Individ. work	<b>ECTS</b>
30	-	30	-	-	120	6

**Nosilec predmeta / Lecturer:** Doc. dr. Leo Mršič**Jeziki / Predavanja / Lectures:** Slovenski / Angleški  
**Languages: Vaje / Tutorial:** Slovenian / Angleški**Pogoji za vključitev v delo oz. za opravljanje študijskih obveznosti:****Prerequisites:**

Za vključitev v delo ni formalnih predpogojev, vendar morajo biti študenti odprti in radovedni, da raziščejo spremembe, ki jih poganjajo digitalne tehnologije.  
Za pristop k izpitu morajo študenti poiskali ustrezne primere uporabe tehnologij digitalne transformacije in jih uporabiti za pripravo in predstavitev projektne naloge.

There are no formal preconditions for this course however students have to be openminded and curious to explore change driven by digital technologies. To take the exam students will be guided to identify relevant use-case and use it to prepare and present a project assignment.

**Vsebina:**

- Uvedba tehnologij digitalne transformacije (diskusija o hitri rasti)

**Content (Syllabus outline):**

- Introducing digital transformation technologies (Discussion about the rapid growth of digitization; Review of

<p>digitalizacije; pregled standardnega partnerstva med umom in stroji);</p> <ul style="list-style-type: none"> <li>• Dopolnilne spremembe, ki so ključna skrb za učinkovito digitalno preobrazbo v podjetju; kako se ključne prakse in procesi podjetja ujemajo z matriko sprememb, da se omogoči učinkovita digitalna preobrazba;</li> <li>• Osnove umetne inteligence (kaj je strojno učenje in kako bi ga lahko uporabili v podjetju; kako bi lahko bilo strojno učenje dragoceno za podjetja; povezava strojnega učenja s ponovnim uravnoteženjem med umom in strojem, ki poteka v drugi dobi strojev; kako bi lahko strojno učenje uporabili v poslovnem kontekstu)</li> <li>• Napredna poslovna analitika (vrednost odločanja na podlagi podatkov kot možna preobrazba za podjetje; kako prilagoditi odločanje v podjetju, da se izkoristii prednosti pristopa, ki temelji na podatkih; prepoznavna, zajem in pridobitev vrednost iz podatkov; strategije monetizacije podatkov)</li> <li>• Upravljanje platform v digitalnem gospodarstvu (vrste poslovnih priložnosti, ki so lahko na voljo v digitalnem gospodarstvu; povezava ključnih konceptov v zvezi z digitalnim gospodarstvom s podjetjem; vrednost omrežnih učinkov in dopolnil v digitalnem gospodarstvu; analizira potenciala za podjetje za izkoriščanje ekonomije digitalnega gospodarstva; kako platforme izkoristijo učinke omrežja za ustvarjanje vrednosti)</li> <li>• Uporaba SW in HW v digitalni dobi (informacijska tehnologija kot ključni vir konkurenčne prednosti podjetij v digitalnem gospodarstvu; načrt od podpore za digitalno poslovanje do temeljev radikalne preobrazbe; upravljanje zapletenih digitalnih projektov)</li> </ul>	<p>standard partnership between mind and machines);</p> <ul style="list-style-type: none"> <li>• Complementary change, which is a key concern for effective digital transformation in a business; how the key practices and processes of a business fit into the Matrix of Change to enable effective digital transformation;</li> <li>• Artificial Intelligence Fundamentals (what machine learning is and how it could be applied in a business; how machine learning could be valuable to businesses; relation of machine learning with the rebalance between mind and machine that is taking place in the second machine age; how machine learning could be used in a business context)</li> <li>• Advanced Business Analytics (the value of data-driven decision as a possible transformation for a business; how to adapt decision making in a business to capitalize on the benefits of a data-driven approach; identification, capturing and harvest the value from data; data monetization strategies)</li> <li>• Managing Platforms in Digital Economy (the types of business opportunities that may be available in the digital economy; relation of key concepts regarding the digital economy to a business; the value of network effects and complements in the digital economy; analysis of potential for a business to capitalize on the economics of the digital economy; how platforms capitalize on network effects to generate value)</li> <li>• SW and HW utilization in digital age (Information technology as a key source of competitive advantage for firms in digital economy; Roadmap from digital business support to fundamentals of radical transformation; Managing complex digital projects)</li> </ul>
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**Temeljni literatura in viri / Readings:**

- McKinsey and Company (2021) McKinsey Our Insights [Online]. Available at: <https://www.mckinsey.com/business-functions/organization/our-insights>
- Berman, S. and Papas, P. (2020) Digital Transformation [Online]. Available at: <https://www.ibm.com/thought-leadership/institute-business-value/report/digital-transformation>
- IBM Inc. (2021) IBM Institute for Business Value – Emerging Technologies [Online]. Available at: <https://www.ibm.com/thought-leadership/institute-business-value/technology/digital>
- Christensen, C. M. (2016) The Innovator's Dilemma: When New Technologies Cause Great Firms to Fail Brighton, MA: Harvard Business Review Press.

#### Dodatni viri / Additional readings

- Rogers D. (2016). The Digital Transformation Playbook: Rethink Your Business for the Digital Age, Columbia University Press.
- Ries E. (2017). The Startup Way: How Modern Companies Use Entrepreneurial Management to Transform Culture and Drive Long-Term Growth; Currency.
- Highsmith, J. R., Luu, L., Robinson, D. (2020) EDGE: Value-Driven Digital Transformation, Boston, MA: Addison-Wesley Professional.
- Anderson, J. and Proctor, P. (2020) Digital Business KPIs: Defining and Measuring Success [Online]. Available at: <https://www.gartner.com/en/doc/3803509-digital-business-kpis-defining-and-measuring-success>
- McAfee A., Brynjolfsson E. (2017). Machine, Platform, Crowd; W. W. Norton and Co.

#### **Cilji in kompetence:**

##### **Splošne kompetence:**

- Splošen pregled nadrazumevanje digitalizacije digitalizacijo poslovanja. Sposobnost interpretacije poslovnih podatkov in priprave poročil na njihovi osnovi.
- Sposobnost uporabe programskih rešitev za razvoj digitalnih poslovnih modelov.
- Sposobnost iskanja virov in pridobivanja podatkov za potrebe digitalizacije poslovanja
- Sposobnost analize in pretvorbe realnega poslovnega problema v obliki lažje predstavljivega poslovnega modela
- Poglobljeno razumevanje delovanja organizacijskih sistemov

##### **Predmetno-specifične kompetence:**

- Sposobnost voditi ekipo pri projektih digitalizacije v organizaciji.

#### **Objectives and competences:**

##### **General competences:**

- General overview of the digitalization of business.
- The ability to interpret business data and prepare reports based on them.
- The ability to use software solutions for the development of digital business models.
- The ability to find sources and obtain data for the needs of digitalization of business
- The ability to analyze and transform a real business problem into a simplified business model
- In-depth understanding of the functioning of organizational systems

##### **Subject-specific competences:**

- The ability to be a team leader for a digitalization projects in organization

- Razumeti pomembne poslovne podatke in zmožnost priprave in predstavitve poročil na podlagi teh podatkov.
- Identificiranje, katera programska in strojna rešitev je najboljša možnost za organizacijo glede na njene posebnosti.
- Identifikacija relevantnih virov podatkov, povezanih s poslovanjem in sposobnost analize pomembnih poslovnih podatkov.
- Sposobnost analize strukture in kompleksnosti informacijskih sistemov.
- Zmožnost uporabe umetne inteligence in strojnega učenja v sodobnem poslovanju.

- To understand important business data and the ability to prepare and present reports based on those data
- To identify which software and hardware solution is best option for organization according to its specifics
- To identify relevant sources of data related to business and ability to analyse important business data
- To analyze structure and complexity of IT systems
- understandability to use an Artificial Intelligence and Machine Learning in modern business

#### **Predvideni študijski rezultati:**

Študenti bodo zmožni:

- uporabiti teoretična znanja in ustrezne koncepte v procesih digitalne transformacije v praksi
- analizirati podatke (tudi s pomočjo umetne inteligence) za pripravo poslovnih poročil
- uporabljati nekaj najnovejših programskih orodij (npr. Tableau, Orange for Python) in tehnik upravljanja podatkov (npr. vizualizacija podatkov, priprava podatkov)
- organizirati in voditi projekte prehoda na digitalne storitve in izdelke

Prenosljive/ključne spretnosti in drugi atributi:

- prenos znanja na druga področja, vključno z uporabo podatkov, razumevanjem umetne inteligence in digitalnih platform za razvoj ustreznega pristopa k dani težavi v obliki projektne naloge

#### **Intended learning outcomes:**

Students will be able to:

- use theoretical and practical aspects of the digital transformation process
- analyze data (also with the help of artificial intelligence) for the preparation of business reports
- use some of the very latest software tools (for example Tableau, Orange for Python) and data management techniques (for example data visualization, data preparation)
- organize and manage projects of transition towards digital service and products

Transferable / Key skills and other attributes:

- Transfer of knowledge to other areas, involving the use of data, understanding of AI and digital platforms to develop appropriate approach to a given problem in the form of project assignment

#### **Metode poučevanja in učenja:**

#### **Learning and teaching methods:**

- *Predavanja z aktivno udeležbo študentov (razlaga, diskusija, vprašanja, primeri, reševanje problemov);*
- *Vaje, kjer študentje na primerih ponovijo temeljne koncepte, predstavljene na predavanjih;*
- *Laboratorijske vaje, kjer se študenti naučijo uporabljati ustrezna programska orodja*

- *Lectures with active participations by the students (explanation, discussion, questions, cases, problems solving);*
- *Tutorials, where students will recall, reinforce, and shed light on the concepts and methods introduced at lectures;*
- *Lab work, where students will learn to use relevant software tools*

**Načini ocenjevanja:**

Delež (v %) /  
Weight (in %)

**Assessment:**

Način (pisni izpit, ustno izpraševanje, naloge, projekt):	Delež (v %) / Weight (in %)	Type (examination, oral, coursework, project):
Pisni izpit	60 %	Written Exam
Projektna naloga	40 %	Project assignment

**Reference nosilca / Lecturer's references:**

- Igor Matić, Leo Mršić, Joachim Keppler (2021) Advanced Analytics Techniques for Customer Activation and Retention in Online Retail, DOI 10.1007/978-3-030-68154-8\_62
- Tolić Antonio, Mršić Leo, Hrvoje Jerković (2021) Learning Success Prediction Model for Early Age Students Using Educational Games and Advanced Data Analysis, DOI 10.1007/978-3-030-68154-8\_61
- Nikola Modrušan, Kornelije Rabuzin, Leo Mršić (2021) Intelligent Public Procurement Monitoring System Powered by Text Mining and Balanced Indicators, DOI 10.1007/978-3-030-83014-4\_6
- Vitasovic L., Kunic Z., Masic L. (2021) Automatic Video Editor for Reportages Assisted by Unsupervised Machine Learning, DOI 10.1007/978-981-16-1685-3\_25
- Javor A., Dambic G., Masic L. (2021) Model for Application of Optical Passive SFM Method in Reconstruction of 3D Space and Objects, DOI 10.1007/978-3-030-73280-6\_35
- Javor Marošević, Goran Dambic, Leo Masic (2021) A Machine Learning Model for the Classification of Musical Composition Genres, DOI 10.1007/978-3-030-73280-6\_52
- Modrušan N. Rabuzin K., Mršić L. (2021) Review of public procurement fraud detection techniques powered by emerging technologies, DOI 10.14569/IJACSA.2021.0120272
- Joanna Rose Del Mar-Raave, Hayretain Bahsi, Leo Masic, Kresimir Hausknecht (2021) A machine learning-based forensic tool for image classification - A design science approach, DOI 10.1016/j.fsidi.2021.301265