UČNI NAČRT PREDMETA / COURSE SYLLABUS	
Predmet:	Poslovna inteligenca II
Course title:	Business Inteligence II

Študijski program in stopnja Study programme and level	Modul Module	Letnik Academic year	Semester Semester
Informacijske in komunikacijske tehnologije, 3. stopnja	Inteligentni sistemi in robotika	1	1
Information and Communication Technologies, 3rd cycle	Intelligent Systems and Robotics	1	1

Vrsta predmeta / Course type   Izbirni / Elective

Univerzitetna koda predmeta / University course code: IKT3-629

Predavanja Lectures	Seminar Seminar	Sem. vaje Tutorial	Lab. vaje Laboratory work	Druge oblike	Samost. delo Individ. work	ECTS
15	15			15	105	5

*Navedena porazdelitev ur velja, če je vpisanih vsaj 15 študentov. Drugače se obseg izvedbe kontaktnih ur sorazmerno zmanjša in prenese v samostojno delo. / This distribution of hours is valid if at least 15 students are enrolled. Otherwise the contact hours are linearly reduced and transfered to individual work.

Nosilec predmeta / Lecturer: Prof. dr. Matjaž Gams

Jeziki / Languages:	Predavanja / Lectures:	slovenščina, angleščina / Slovenian, English
	Vaje / Tutorial:	

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

Prerequisites:

Zaključen študij druge stopnje s področja informacijskih ali komunikacijskih tehnologij ali zaključen študij druge stopnje na drugih področjih z znanjem osnov s področja predmeta. Potrebna so tudi osnovna znanja matematike, računalništva in informatike.	Completed second cycle studies in information or communication technologies or completed second cycle studies in other fields with knowledge of fundamentals in the field of this course. Basic knowledge of mathematics, computer science and informatics is also requested.

Vsebina:

Content (Syllabus outline):

Znanstvena metoda:
    strukture znanstvenega védenja, znanstvene aktivnosti in procesi
Uvod:
    Definicija inteligence in poslovne inteligence (BI), osnovna shema BI, kriteriji, razlogi in področja za uvajanje, problemi in pasti uvajanja, najboljše poslovne prakse, definicija poslovne analitike in primeri uporabe, pregled razlik med
	Scientific Method:
	    scientific knowledge structures, scientific activities/processes
	Introduction:
	    Definition of intelligence and business intelligence (BI), basic BI schema, criteria, reasons and areas for adoption, common problems and pitfalls, best practices, definition of business analytics (BA) and some use-cases,

poslovno inteligenco in poslovno analitiko, primeri iz prakse.

Upravljanje s podatki:
Podatkovna skladišča, kakovost podatkov, priprava in oplemenitenje podatkov, migracija podatkov, posredovanje podatkov, primeri največjih nevarnosti in napak.

Poslovna analitika:
Odkrivanje, analiza in definiranje poslovnih problemov, inteligentno analitično modeliranje za reševanje poslovnih/tržnih problemov, ovrednotenje in prenos rezultatov v poslovno prakso, pregled tipičnih poslovnih problemov.

Strategije trženja in neposredno trženje:
Poslovne strategije, planiranje in razvoj strategij, strategije neposrednega trženja, poslovni modeli, analiza trženjskih priložnosti in okolja. Analiza trga in strank, kontaktne strategije, tržni kanali, problemi integracije, personalizacija tržnih vsebin, spremljanje aktivnosti strank, upravljanje tržne učinkovitosti, trženje na osnovi dogodkov, trženje v realnem času.

Teorija iger in njena uporaba:
Antagonistične igre s hkratnimi in zaporednimi potezami, Nashevo ravnovesje in kako ga najti, čiste in mešane strategije.
Poslovna uporaba: barantanje, dražbe, pogajanja. Računalniška simulacija.

Izzivi pri razvoju programskih sistemov in implementacija projektov:
Predstavitev celotnega procesa razvoja programskih projektov s poudarkom na reševanju problemov, na katere naletimo pri večjih projektih.

Orodja in rešitve:
Pregled najboljših orodij in rešitev na trgu za BI/CI, vpogled v prihajajoče tehnologije.

review of differences among BI and BA, best practices.

Data handling:
Data warehousing, data quality, data preparation/enhancement, data migration, data mediation, examples of major pitfalls.

Predictive business analytics:
Business problem detection, analysis, and definition, analytical modeling for solving business/marketing problems, evaluation and business adoption of modeling results, overview of various industry.

Marketing strategies and direct marketing:
Business strategies, strategy planning and development, direct marketing strategies (product, offer, media, distribution and creative strategies), business models, analysis of marketing opportunities and environment. Customer/market analysis and research, contact strategies, marketing channels, integration aspects, creative tactics, content personalization, response tracking, marketing performance management, event-driven marketing, real-time marketing, best practice examples in various industries.

Game theory and its applications:
Simultaneous-move (static) and sequential-move (dynamic) non-cooperative games, Nash equilibrium and how to find it, pure and mixed strategies. Business applications: bargaining, auctions, negotiations.

Challenges in software engineering and project implementation:
A detailed overview of development of software project with the emphasis on understanding problems that are specific to big software projects.

Tools and Solutions:
Overview of best-of-breed BI/CI tools and solutions in the marketplace, insight into emerging technologies.

Temeljna literatura in viri / Readings:

Izbrana poglavja iz naslednjih knjig: / Selected chapters from the following books:
- R. Sharda, D. Delen, and E. Turban. *Business Intelligence and Analytics: Systems for Decision Support,* 10th Edition. Prentice Hall, 2014. ISBN 978-0133050905
- A. Maheshwari. *Business Intelligence and Data Mining Made Accessible*. Business Expert Press, 2014. ISBN 978-1631571206
- R. Sherman. *Business Intelligence Guidebook: From Data Integration to Analytics*. Morgan Kaufmann,

2014. ISBN 978-0124114616
- F. Provost, and T. Fawcett. *Data Science for Business: What you need to know about data mining and data-analytic thinking*. O'Reilly Media, 2013. ISBN 978-1449361327
- J. Kolb. *Business Intelligence in Plain Language: A practical guide to Data Mining and Business Analytics*. CreateSpace Independent Publishing Platform, 2013. ISBN 978-1479324187

Cilji in kompetence:	Objectives and competences:
Cilj predmeta je podati splošno in napredno znanje o poslovni inteligenci in poslovni analitiki, nadgrajenim z znanjem in potrebami strateškega (marketinškega) odločanja. Uvodoma so predstavljeni temelji področja poslovne inteligence in poslovne analitike, cilji, namen in ključni problemi vpeljave le-teh ter najboljše prakse. Študenti, ki bodo uspešno končali ta predmet, bodo obvladali osnove in nadgradnjo poslovne inteligence in bodo usposobljeni za uporabo tovrstnih metod in algoritmov v reševanju zahtevnih poslovnih aplikacij in vrednotenje njihovih rezultatov.	The goal of the course is to provide general and advanced knowledge of business intelligence and business analytics extended with the knowledge and skills for strategic (marketing) decision-making. Firstly, the business intelligence and business analytics grounds will be presented, followed by the goals, objectives, and common problems of their adoption. Strong focus is given to best practices. The students who will successfully complete this course will master the basics and some advanced areas of business intelligence and will be capable of applying these methods in solving demanding business problems and evaluating their results.

Predvideni študijski rezultati:	Intended learning outcomes:
Študenti bodo z uspešno opravljenimi obveznostmi tega predmeta pridobili: - osnove znanstvenega pristopa v poslovanju - osnovna znanja poslovanja v realnem svetu - pregled obstoječih nalog in metod poslovne inteligence - obvladovanje tehničnih in poslovnih vidikov metod poslovne inteligence - sposobnost uporabe obstoječih metod strojnega učenja na novih problemih poslovanja - sposobnost ugotavljanja uspešnosti metod strojnega učenja ali rudarjenja podatkov pri uporabi na konkretni nalogi poslovne inteligence - napredna znanja iz nekaterih poglavij poslovne inteligence - sposobnost samostojnega reševanja poslovnih odločitev in izdelave analiz	Students successfully completing this course will acquire: - Basic scientific approach in business intelligence - Basic BI knowledge in real world - Overview of existing tasks and methods in BI - Mastering technical and business aspects of business intelligence - The ability to apply existing ML methods to BI problems - The ability to identify whether ML or DM methods are successful given domain - Advanced knowledge about specific areas of business intelligence - An ability to perform advanced business decisions and business analyses.

Metode poučevanja in učenja:	Learning and teaching methods:
Predavanja, seminar, konzultacije, individualno delo	Lectures, seminar, consultancy, individual work

Načini ocenjevanja:	Delež (v %) / Weight (in %)	Assessment:
Seminarska naloga	80 %	Seminar work
Ustni zagovor	20 %	Oral defense

Reference nosilca / Lecturer's references:

- V. Vidulin, M. Bohanec, and **M. Gams**. "Combining human analysis and machine data mining to obtain credible data relations." *Information sciences*, vol. 288, pp. 254-278, 2014.
- **A. Pivk**, O. Vasilecas, D. Kaliatiene, and R. Rupnik. "On approach for the implementation of data mining to business process optimisation in commercial companies." *Technological and economic development of economy*, vol. 19, no. 2, pp. 237-256, 2013.
- D. Zupančič, M. Luštrek, and **M. Gams**. "Multi-agent architecture for control of heating and cooling in a residential space." *The Computer journal*, ISSN 0010-4620, 2014.
- B. Pogorelc, E. Stojmenova, **M. Gams** et al. "Ambient bloom: new business, content, design and models to increase the semantic ambient media experience." *Multimedia tools and applications*, vol. 66, no. 1, pp. 7-32, 2014.
- **M. Gams**, H. Gjoreski, M. Luštrek, B. Kaluža, Metoda in sistem za prepoznavanje aktivnosti na podlagi konteksta : patent SI 23356 A. Ljubljana: Urad RS za intelektualno lastnino, 28. nov. 2014. [COBISS.SI-ID 27964199] - patent