UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet:	Poslovna inteligenca I
Course title:	Business Inteligence I

Študijski program in stopnja Study programme and level	Modul Module	Letnik Academic year	Semester Semester
Informacijske in komunikacijske tehnologije, 2. stopnja	Inteligentni sistemi in robotika	1	2
Information and Communication Technologies, 2nd cycle	Intelligent Sytems and Robotics	1	2

Vrsta predmeta / Course type | Izbirni / Elective

Univerzitetna koda predmeta / University course code: | IKT2-619

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

Pogoji za vključitev v delo oz. za opravljanje študijskih obveznosti:	**Prerequisites:**
Zaključen študijski program prve stopnje s področja naravoslovja, tehnike ali računalništva.	Student must complete first-cycle study programmes in natural sciences, technical disciplines or computer science.

Vsebina:	**Content (Syllabus outline):**

Znanstvena metoda:
    strukture znanstvenega védenja, znanstvene aktivnosti in procesi
Uvod:
    Definicija poslovne inteligence (BI), definicija upravljanja s strankami (CI), arhitektura BI/CI za podjetja.
Osnove trženja:
    Poslovno informiranje, odločanje, strategije, planiranje in razvoj strategij, strategije neposrednega in posrednega trženja (strategije izdelkov, ponudbe, medijev, distribucije),
	Scientific Method:
	    scientific knowledge structures, scientific activities/processes
	Introduction:
	    Definition of business intelligence (BI), definition of customer intelligence (CI), enterprise BI/CI architectures.
	Basic marketing approaches:
	    Business informing, decision making, strategies, strategy planning and development, direct and indirect marketing strategies (product, offer, media, distribution and creative strategies),

poslovni modeli, analiza trženjskih priložnosti in okolja.

Orodja za delo s podatki:
  Preglednice.
  Podatkovne baze.
  Druga orodja.
  Primeri, osnovna in napredna praktična uporaba
  Podatkovna skladišča, kakovost podatkov, priprava in oplemenitenje podatkov, migracija podatkov, posredovanje podatkov.

Poslovna analitika:
  Definiranje in analiza poslovnih problemov, inteligentno analitično modeliranje (kvalitativno/kvantitativno modeliranje, metrike, profiliranje, opredeljevanje strank) za reševanje poslovnih/tržnih problemov, ovrednotenje in prenos rezultatov v poslovno prakso, pregled tipičnih poslovnih problemov, kot so kreditno tveganje, napovedovanje prekinitve poslovnih odnosov strank, zadrževanje strank, napovedovanje prodajnih možnosti, odkrivanje poneverb itd.

Avtomatizacija trženja:
  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, primeri iz različnih industrij (bančništvo, telekomunikacije, maloprodaja, zavarovalništvo, proizvodnja), etični in pravni vidiki.

Izzivi pri razvoju programskih sistemov in implementacija projektov:
  Predstavitev celotnega procesa razvoja programskih projektov.

Orodja in rešitve:
  Pregled najboljših orodij in rešitev na trgu za BI/CI.

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business models, analysis of marketing opportunities and environment.

Basic business software tools:
  Data handling tools:
  Spreadsheets.
  Databases.
  Other tools.
  Examples, practical use at basic and advanced level.
  Data warehousing, data quality, data preparation/enhancement, data migration, data mediation.

Predictive business analytics:
  Business problem definition, analysis, analytical modeling (descriptive/predictive modeling, metrics, customer centric profiling, customer scoring) for solving business/marketing problems, evaluation and business adoption of modeling results, overview of various industry examples such as credit scoring, risk scoring, churn prediction, customer retention, cross/up-sell, fraud detection etc.

Marketing automation:
  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 (banking, telecommunications, retail, insurance, and manufacturing), ethics and legal aspects.

Challenges in software engineering and project implementation:
  A detailed overview of development of software project.

Tools and Solutions:
  Overview of best-of-breed BI/CI tools and solutions in the marketplace.

Temeljna literatura in viri / Readings:

Izbrana poglavja iz naslednjih knjig: / Selected chapters from the following books:

- A. Ferrari, and M. Russo. *The Definitive Guide to DAX: Business intelligence with Microsoft Excel, SQL Server Analysis Services, and Power BI (Business Skills).* Microsoft Press, 2015, ISBN-13: 978-0735698352
- 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:

Cilj predmeta je podati osnovno znanje o poslovni inteligenci in o strateškem marketinškem odločanju. Uvodoma so predstavljeni temelji področja poslovne inteligence, nato pa so obdelane poslovne in tržne strategije, njihovo načrtovanje in razvoj ter možnosti in načini prenosa v prakso.

Cilj je tudi naučiti študente uporabljati osnovna poslovna orodja, kot so preglednice in podatkovne baze.

Osredotočili se bomo na pripravo in migracijo podatkov ter reševanje tipičnih problemov in nevarnosti, katerim se poskušamo izogniti.

V naslednjem sklopu je glavni cilj zagotoviti poglobljeno razumevanje narave in obsega tržne analize in njene vloge pri strateškem marketingu. Ta obsega analizo poslovnih problemov in priložnosti, odkrivanje nezadoščenih potreb strank, odkrivanje konkurenčne prednosti in napovedovanje vedenjskih vzorcev strank, kar omogoča organizaciji proaktivno nastopanje na trgu. V ta namen si bomo podrobno ogledali primerne analitične metode za posamezne probleme in proces vpeljevanja v prakso, kjer bodo nakazane tudi težave, ki se tipično pojavljajo.

Objectives and competences:

The goal of the course is to provide basic knowledge of business intelligence and extend it with the knowledge and skills for strategic marketing decision-making. Firstly, the business and customer intelligence areas will be presented. Afterwards, we will focus on business and marketing strategies, their planning, development and practical application.

Students should get acquainted with basic business tools like spreadsheets and databases. Multiple data sources, data quality and integration of data into data warehouses are the first major obstacle when implementing business intelligence solutions.

We will focus on preparation and integration of data, how to resolve possible problems and typical pitfalls that we want to avoid.

The main objective of the next part is to provide a deeper understanding of the nature and scope of marketing analysis and its role in strategic marketing. This includes investigating product-market opportunities, discovering unmet consumer needs, determining competitive advantage and forecasting customer behavior patterns so as to be proactive in the marketplace. Therefore, we will cover in detail problem-specific analytical methods and how they are applied in practice. The problems arising during this phase will also be indicated.

Predvideni študijski rezultati:

Študenti bodo z uspešno opravljenimi obveznostmi tega predmeta pridobili:

- Sposobnost analize, sinteze in predvidevanja rešitev ter posledic
- Obvladanje raziskovalnih metod, postopkov in procesov, razvoj kritične in samokritične presoje
- Sposobnost uporabe znanja v praksi
- Avtonomnost v strokovnem delu
- Razvoj komunikacijskih sposobnosti in spretnosti, posebej komunikacije v

Intended learning outcomes:

Students successfully completing this course will acquire:

- An ability to analyse, synthesise and anticipate solutions and consequences
- To gain the mastery over research methods, procedures and processes, a development of the critical judgement
- An ability to apply the theory in to a practice
- An autonomy in the professional work
- Communicational-skills development; particularly in international environment

• mednarodnem okolju • Etična refleksija in zavezanost profesionalni etiki • Kooperativnost, delo v skupini (in v mednarodnem okolju) • Poznavanje področja poslovne inteligence in upravljanja s strankami • Poznavanje tržnih strategij, planiranja in razvoja strategij za boljše poslovno odločanje • Poznavanje upravljanja s podatki za potrebe poslovne inteligence • Poznavanje analitičnih metod primernih za poslovno uporabo ter njihove uporabe v realnih situacijah • Poznavanje strategij neposrednega trženja, upravljanja in analize učinkovitosti, taktikah kontaktiranja, etiki in pravnih vidikih • Poznavanje teorije iger • Zmožnost predstavitve poslovnih situacij z vidika teorije iger • Poznavanje razvoja in vodenja softverskih projektov • Poznavanje tržnih orodij in rešitev za BI	• Ethical reflexion and obligation to a professional ethics • Cooperativity, team work (in international environment) • Knowledge of business intelligence and customer intelligence area • Knowledge of marketing strategies, strategy planning and development for strategic decision- making • Knowledge of data handling issues for BI purposes • Knowledge of predictive modeling for business purposes and its real-life applicability • Knowledge of direct marketing strategies, marketing performance management, creative and contact tactics, ethics and legal aspects • Knowledge of game theory • The ability to view business situations in game- theoretic terms • Knowledge of design and management of software projects • Awareness of BI solutions in the marketplace

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	50 %	Seminar work
Ustni zagovor seminarske naloge	50 %	Oral defense of seminar work

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.
- A. Tavčar, D. Kužnar, and **M. Gams**. Hybrid multi-agent strategy discovering algorithm for human behavior. *Expert systems with applications*, vol. 71, str. 370-382, 2017.
- **M. Gams**. Slovenia is truly excellent, *Delo*, ISSN 0350-7521, 20., 41, p. 5. [COBISS.SI-ID 30418471], 2017.
- **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