Fakulteta za organizacijske študije
Faculty of organisation studies

Fakulteta za organizacijske študije v Novem mestu

UČNI NAČRT PREDMETA / *COURSE SYLLABUS*

Predmet:	Metode kvantitativne analize
***Course title*:**	Methods of quantitative analysis

Študijski program in stopnja *Study programme and level*	**Študijska smer** *Study field*	**Letnik** *Academic year*	**Semester** *Semester*
Menedžment kakovosti Podiplomski (druga)	Program nima smeri	1.	1.
Quality Management Graduate-Master (Second)	The program has no study fields	1	1

Vrsta predmeta / *Course type:*	Obvezni	Required
Univerzitetna koda predmeta / *Universitiy course code*:	021003-03	

Predavanja *Lectures*	**Seminar** *Seminar*	**Sem. vaje** *Tutorial*	**Lab. vaje** *Laboratory work*	**Teren. vaje** *Field work*	**Samost. delo** *Individ. work*	**ECTS**
30	-	30	-	-	150	7

Nosilec predmeta / *Lecturer*:	prof. ddr. Janez Usenik	Dr. multi. Janez Usenik Full Professor

Jeziki / *Languages:*	**Predavanja / *Lectures*:**	**Vaje / *Tutorial:***
	Slovenski, angleški	Slovenski, angleški
	Slovenian	Slovenian

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

– Študent/študentka mora pred pristopom k izpitu pripraviti in zagovarjati seminarsko nalogo.

Prerequisites:

– The student must prepare and defend an empirical seminar paper as a prerequisite for the final exam.

Vsebina:

1. Pojem kvantitativnih metod, Teoretični in konceptualni vidiki kvantitativnega raziskovanja.
2. Struktura kvantitativne raziskave.
3. Statistične metode:
   - Osnovni pojmi, zbiranje in prikazovanje podatkov, njihova obdelava in interpretacija rezultatov.
4. Osnove verjetnostnega računa
   - Slučajne spremenljivke.
   - Porazdelitve, zvezne, diskretne.
   - Računalniška orodja.
5. Mehka logika:
   - Osnovni pojmi, mehko sklepanje.
   - Modeliranje sistemov, interperetacij,
   - Računalniško orodje FuzzyTech.

Content (Syllabus outline):

1. Defining quantitative methods, theoretical and conceptual aspects of quantitative research.
2. Structure of quantitative research.
3. Statistical methods:
   - Basic concepts, collection and presenting data, data processing and interpretation of results
4. Basic probability
   - Random variables
   - Distributions, continuous, discrete
   - Computer tools
5. Fuzz logic
   - Basic concepts, fuzzy conclusions
   - System modelling, interpretation
   - Computer tool FuzzyTech.

Temeljna literatura in viri / *Readings*

Obvezna literature / *Required reading(s):*

- Usenik, J. (2010). *Matematične metode II*. Krško: Fakulteta za energetiko. (poglavje Linearno programiranje).
- Jesenko, J. (2001). *Statistika v organizaciji in managementu*. Kranj: Moderna organizacija.
- *FuzzyTech, Users Manual* (2011). Pridobljeno na http://www.fuzzytech.com/.
- Usenik, J. (2012). *Mehka logika in nevronske mreže* (zapiski predavanj – skripta).
- Usenik, J. (2006). *Kvantitativne metode v logistiki*. Krško: Valvasorjev raziskovalni center.
- Usenik. J. (2011). *Kvantitativne metode* (zapiski predavanj – skripta). Krško: Fakulteta za energetiko.

Dodatna – dopolnilna / *Recommended reading(s):*

- Tominc, P. (2000). *Statistične metode: uporaba v prometu*. Maribor: Fakulteta za gradbeništvo.
- Waters, D. (2007). *Quantitative Methods for Business*. Harlow, Essex, Anglija: Addison Wesley Longman Publishers.
- Winston, W. L. (1994). *Operations Research: Applications and algorithms*. Belmont: Duxbury Press.
- Ibrahim, M. A. (2004). *Fuzzy Logic for Embedded Systems Applications*. Burlington, MA: Elsevier Science.
- Von Altrock, C. (1997). *Fuzzy Logic & Neurofuzzy Applications in Business & Finance*. Upper Saddle River, NJ: Prentice Hall.
- Zapiski, tekoča periodika.

Cilji in kompetence:	***Objectives and competences:***
Študenti: – Uporaba metodoloških orodij, tj. izvajanje, koordiniranje in organiziranje raziskav, uporaba raznih raziskovalnih metod in tehnik. – Sposobnost oblikovanja izvirnih idej, konceptov in rešitev določenih problemov. – Koherentno obvladovanje temeljnega znanja, sposobnost povezovanja znanja z različnih področij na katerih temeljita kakovost in poslovna odličnost. – Razvoj komunikacijskih sposobnosti in spretnosti za komuniciranje z različnimi okolji. – Sposobnost timskega dela, tj. pripravljenost na sodelovanje, kooperativnost, upoštevanje mnenj drugih in izpolnjevanje dogovorjene vloge v okviru tima in skupine. – Poznavanje profesionalne etike, pravne zakonodaje, priznavanje in spoštovanje moralnih in etičnih načel in vrednot ter njihova uporaba pri delu. – Usposobljenost za predstavitev pridobljenega temeljnega znanja in raziskovalnih dognanj v obliki projektne naloge, aplikativne, razvojno raziskovalne naloge ali strokovnega članka. – Usposobljenost za sprejemanje odgovornosti za profesionalni razvoj in učenje, izboljševanje lastnega dela skozi evalvacijo z namenom samopreseganja in s tem nenehnega izboljševanja kakovosti in odličnosti dela. – Sposobnost usmerjanja in izmenjave znanja v okviru kulture stalnega učenja, inoviranja in izboljševanja. – Usposobljenost za reševanje konkretnih delovnih problemov z uporabo kvantitativnih metod in postopkov. – Razumevanje in uporaba metod kritične analize in	– Using methodological tools, i.e., implementation, coordination, and organization of research, using various research methods and techniques. – Ability to formulate original ideas, concepts and solutions to specific issues. – Coherent management of fundamental skills, the ability to integrate knowledge from various fields that are based on quality and business excellence. – The development of communication skills and abilities to communicate with different environments. – Ability for teamwork, i.e., willingness to collaborate and cooperate, respecting the opinions of others and completing the designated task within the team and group. – Knowledge of professional ethics, laws, recognition, and respect for moral and ethical values and principles to their application at work. – The ability to present acquired fundamental knowledge and research findings in the form of project work, applied and/or developmental research paper or professional article. – The competency to take responsibility for professional development and learning, improving one's own work through evaluations with a view to self-transcend, and as such, the continuous improvement of quality and excellence. – The ability to direct the creative capacities of staff and personnel that are based on shared values and a culture of trust and empowerment that encourages inclusion for everyone. – The ability and skills to solve concrete work-related problems using scientific methods and procedures. – Understanding and the application of critical analysis

razvoja teorij ter njihova uporaba pri reševanju problemov s področja kakovosti in poslovne odličnosti.	methods and development of theories and their applications in problem-solving in the area of quality and business excellence.

Predvideni študijski rezultati:	***Intended learning outcomes*:**
Študenti: – V kontekstu raziskovalnega procesa in v povezavi z drugimi predmeti demonstrira znanje relevantnih vprašanj iz področja organizacijskih študij. – Zavzame stališče do ključnih etičnih vprašanj v raziskovalnem procesu in kritično vrednoti konkreten primer. – Pozna in uporablja osnovne metode in tehnike kvantitativnega raziskovanja. – Uporablja osnovno programsko opremo za kvantitativno analizo. – Izvede načrt kvantitativne raziskave. – Reflektira in kritično ovrednoti primernost določene raziskovalne metode za analizo konkretnega problema. .	The student will: – In the context of the research process and in connection with other courses demonstrate knowledge of relevant questions from the area of organizational studies. – Take a standpoint to key ethical questions in the research process and critically evaluate a concrete example. – Know and use basic methods and techniques of quantitative research. – Use basic program equipment for quantitative analysis. – Designs a plan for quantitative research. – Reflect and critically evaluates appropriateness of certain research methods for the analysis of a concrete problem.

Metode poučevanja in učenja:	***Learning and teaching methods:***
– Predavanja: pri predavanjih študent spozna teoretične in aplikativne vsebine predmeta. Avditorna predavanja in praktično delo pri avditornih vajah. – Seminarske vaje. pri vajah študent utrdi teoretično znanje in spozna aplikativne možnosti.Laboratorijske vaje (računalnica)	– Lectures with active student participation learning on theoretical and applicative aspects of the course. Auditory lectures and practical work in auditory exercises. – Seminar exercise to practice using theoretical knowledge and learns applicative possibilities. Laboratory exercises (computer room).

Načini ocenjevanja:	**Delež / *Weight* (%)**	***Assesment:***
Način (pisni izpit, ustno izpraševanje, naloge, projekt)		*Type (examination, oral, coursework, project)*
– Ustni izpit	50%	– Written / Oral Exam
– Seminarska naloga	50%	– Empirical seminar paper with reports from seminar work and seminar paper presentation

Reference nosilca / Lecturer`s references:

– BOGATAJ, Marija, USENIK, Janez. Fuzzy approach to the spatial games in the total market area. *Int. j. prod. econ.*. [Print ed.], 8 January 2005, vol. 93-94, str. 493-503. [COBISS.SI-ID 15011302]
– USENIK, Janez, BOGATAJ, Marija. A fuzzy set approach for a location-inventory model. *Transp. plann. technol.*, 2005, vol. 28, no. 6, pp. 447-464. [COBISS.SI-ID 9626785]
– USENIK, Janez. Fuzzy approach in process of multiple-attribute decision making. *Journal of energy technology*, Nov. 2008, vol. 1, iss. 1, str. 43-58. [COBISS.SI-ID 12997142]
– USENIK, Janez, VIDIČEK, Meta, VIDIČEK, Matija, USENIK, Janez. Control of the logistics system using Laplace transforms and fuzzy logic. *Logistics and sustainable transport*, 2008, vol. 1, issue 1, str. 1-19, graf. prikazi. [COBISS.SI-ID 9874849]
– USENIK, Janez. Mathematical model of the power supply system control. *Journal of energy technology*, Aug. 2009,

vol. 2, iss. 3, str. 29-46. [COBISS.SI-ID 1024008028]

- USENIK, Janez. Fuzzy approach to optimise energy capacities for permanent and reliable electricity supply *Journal of energy technology*, Aug. 2010, vol. 3, iss. 3, str. 13-26. [COBISS.SI-ID 1024031324]
- USENIK, Janez. Generalised continuous variable dynamic linear programming in energy systems, *Journal of energy technology*, Nov. 2010, vol. 3, iss. 4, str. 19-31. [COBISS.SI-ID 1024034652]
- USENIK, Janez. Fuzzy dynamic linear programming in energy supply planning = Mehko dinamično linearno programiranje pri načrtovanju energetske oskrbe.*Journal of energy technology*, Oct. 2011, vol. 4, iss. 4, str. 45-62.
- USENIK, Janez, REPNIK, Maja. System control in conditions of discrete stochastic input process = Upravljanje sistema v pogojih diskretnega slučajnostnega vhodnega procesa. *Journal of energy technology*, feb. 2012, vol. 5, iss. 1, str. 37-53. [COBISS.SI-ID 1024081500]
- USENIK, Janez. *Upravljanje logističnih sistemov*. 1. izd. Novo mesto: Biro 4D, 2002. 275 str., ilustr. ISBN 961-90135-4-9. [COBISS.SI-ID121257216]
- USENIK, Janez, BOGATAJ, Marija. *Fuzzy approach for a location-inventory model*, (Mathematical economics, operational reseach and logistics, serial no. 3). Ljubljana: Faculty of Economics, 2004. 82 str., ilustr. ISBN 961-240-027-X. [COBISS.SI-ID 217054208]
- USENIK, Janez. *Matematične metode II*. 1. izd. Krško: Fakulteta za energetiko, 2010. 344 str., ilustr. ISBN 978-961-6800-02-0. [COBISS.SI-ID63496449]
- USENIK, Janez. Matematične metode I, Univerza v Mariboru, Fakulteta za energetiko, 2009, ISBN 978-961-6800-01-3, COBISS.SI-ID 63496193.