

Course title: Decision Support Systems		
Teacher(s): Zoran D. Nešić, Miloš Ž. Papić		
Course status: elective		
Number of ECTS credits: 10		
Condition: None		
Course objectives The aim of this course is to learn advanced methods, techniques and systems for supporting complex real-life decision-making tasks. Special emphasis is on learning and mastering advanced methods of decision analysis and multicriteria modeling, and their practical applications for solving complex decision problems.		
Learning outcomes Students successfully completing this course will acquire: <ul style="list-style-type: none"> • understanding the concepts of decision making, decision processes and decision support systems, • understanding of various decision tasks and categories of decision problems, • understanding the approaches of decision analysis and decision modeling, • the ability to identify decision problems and specify its properties and components, • the ability to develop and apply a decision model in real-life decision problems, • basic skills for using decision support and decision modeling software. 		
Contents <i>Theory:</i> Place and role of DSS in decision-making, structure of decision-support systems, classification of decision-support systems. Decision making and decision support, decision process, components of decision making, taxonomy of decisions, disciplines related to decision making. Modeling methods and techniques of decision analysis, decision making under risk and uncertainty, decision tables, decision trees, influence diagrams, multi-criteria models, selected multi-criteria modeling methods: Kepner-Tregoe, MAUT, AHP, DEX, TOPSIS, PROMETHEE, UTA... Integration of decision trees, influence diagrams and multi-criteria models, integration of data mining and decision modeling, integration of qualitative and quantitative modelling, probabilistic and confidence modelling, aggregation functions, decision model revision. <i>Practical training:</i> Use of selected decision support techniques and tools.		
Recommended literature [1] Greco, S., Ehrgott, M., Figueira, J.: Multiple Criteria Decision Analysis: State of the Art Surveys. Springer, 2016. ISBN 978-1-4939-3094-4. DOI: 10.1007/978-1-4939-3094-4 [2] Ramanathan Sugumaran, John Degroote. Spatial Decision Support Systems: Principles and Practices, CRD Press, ISBN 9781420062090 - CAT# 62093, 2010. [3] Chiang Jao, Decision Support Systems, ISBN 978-953-51-0799-6, 282 pages, Publisher: InTech, Chapters published October 17, 2012 under CC BY 3.0 license.		
Number of active classes: 7	Theory: 5	Practice: 2
Teaching methods Lectures, consultations, with the realization of theoretical and practical interactive hybrid teaching with cooperative study, research and problem solving in the DSS domain of knowledge.		
Evaluation (maximum number of points 100) Prerequisites: 50 points Final part of the exam: 50 points		
Weays of testing the knowledge may vary: (written tests, oral exam, project presentation, seminars etc.)		
*maximum length 1 A4 page		