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| **Subject name:** Decision support systems  | **subject code:** GMXDS2EBNF  | **weekly/semester hours:** full time: 1Lc+0Pr+2lab    |
| **Credits:** 4 **Requirement:** midterm mark   | **Pre-requirement:** -   |
| **Subject owner:** Dr. habil. Ágnes Szeghegyi  | **Position:** associate professor  | **Faculty and Department name:** Keleti Károly Faculty of Business and Management Department of Management and Quantitative Methods  |
| ***Way of Assessments:***   |
| **Course description:**  |
| Demonstrate the theoretical background and practical application of decision-making, including in solving technical and economic problems, and develop decision-making skills. Today's reality is the partial or full automation of human thinking. Computer-based decision support systems, i.e. knowledge-based/expert systems capable of dealing with uncertainty, are indispensable tools for making managerial decisions on complex problems. In knowledge-based/expert systems, soft computing offers an alternative way of storing information in a crisp manner. They are also suitable for mathematical representation and management of knowledge, often expressed in human language only, and for further refinement, which is subject to uncertainties.  |
| **Detailed description of the subject, schedule**  |
| **Education weeks**  | **Topics for lectures and practices**  |
| 1.  | Global overview, subject knowledge map  |
| 2.  | Data, information, knowledge interrelationship  |
| 3.  | Dimensions of knowledge, learning theory  |
| 4.  | Problem solving process, decision making  |
| 5.  | Types of rationality, thinking strategies  |
| 6.  | Decision-making models, heuristics  |
| 7.  | Role of information technology in decision making, knowledge-based technology  |
| 8.  | Inference mechanisms in knowledge-based systems  |
| 9.  | Structure of knowledge-based systems  |
| 10.  | Uncertainty management  |
| 11.  | Fuzzy logic, fuzzy systems  |
| 12.  | Other IT solutions (GSS, GDDS, TMS, etc.)  |
| 13.  | ICT, DESI analysis, generation problems  |
| 14.  | ICT problem areas in higher education and business innovation  |
| **Mid-term requirements** |
| The course is taught in a blended format. The theoretical knowledge will be worked through independently in Moodle, and a case study will be uploaded for each of the two covariant methods and the software help for the laboratory exercises. A mid-term requirement is the successful completion of the self-tests for each topic of the theoretical material in the moodle system. The results of 51% of the tests are considered successful. The tests contain true-false, multiple-choice and fill-in-the-blank questions. The test can be solved more than once, as well as a self-solved problem solved in the laboratory exercises using deductive and inductive reasoning and uploaded in the specified format to the relevant interface of the Moodle system. |
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| Midterm papers, exams, submissions: |
| 1.  | End of semester final examination  |
| 2.   | Independent solution to a problem in the context of laboratory exercises  |
| 3.  |   |
| 4.  |   |
| The signature requirement, the method used to form an exam mark: |
|  Successful completion of the final test by the last week of the academic term, on a predetermined date. The test consists of true-false, multiple-choice and fill-in-the-blank questions. The test can be taken once. The mid-term grade is determined as the unweighted arithmetic average of the results of the final test and the independent laboratory exercises.  |
| **Professional competences to be acquired**  |
| a, knowledge - General knowledge of the regulatory issues and problems of the information society. - Basic knowledge of all aspects of information management, including IT strategy, process management, systems development, knowledge management, IT service management, project management, risk management, performance management, IT asset management, IT security and IT audit concepts and their interrelationships - Have a basic understanding of information systems, understand the principles of architecture organisation and be able to interpret the components of computer and information architecture in context.  b, skills - Ability to understand and analyse business processes, to prepare and execute requirement specifications for software applications to support implementation, and to perform simple programming tasks.  - Ability to work in collaboration with business and IT professionals, using the most effective IT solutions, to prepare solution versions of business problems, initiate and implement IT support and c, development. - Ability to perform database management tasks, simple data migration tasks. - Ability to adapt business applications, initiate organisational changes necessary for the implementation of IT applications, collaborate in their implementation.  d, attitude - Open to learning about and embracing professional and technological developments and innovations in IT and its applications. - He/she is committed to communicating the results of his/her work in IT to his/her peers in his/her field of work and in his/her field of application. - Is reflective about own professional competences and activities. - Pursues continuous professional development and general self-learning.  e, autonomy and responsibility - Responsible for his/her own professional activities and those of the team. - In his/her managerial activities, takes responsibility for the professional work of those under his/her authority.  |
| **Literature**  |
| Jolán, Velencei ; Ágnes, Szeghegyi ; Zoltán, Baracskai ; Beatrix, Bókayné Andráskó:Modeling the intuitive decision-makers mindset Acta Polytechnica Hungarica(2019), Velencei, Jolán ; Szeghegyi, Ágnes: Döntés, közlekedési eszköz beszállítójának kiválasztásáról: egy szakértőrendszer alkalmazhatósága. In: Péter, Tamás (szerk.) IFFK 2018: XII. Innováció és fenntartható felszíni közlekedés. Budapest, Magyarország : Magyar Mérnökakadémia (MMA), (2018) pp. 1-5, 5p., Skala, K., Davidović, D., Afgan, E., Sović, I. &; Šojat, Z. (2015) Scalable Distributed Computing Hierarchy: Cloud, Fog and Dew Computing. In: Open Journal of Cloud Computing (RobPub) 2 (1): 16–24. ISSN 2199-1987  |