

UNIVERSITY OF MACEDONIA MBA PROGRAM	
COURSE TITLE	Decision Support Systems
Course Code	ΔEO205
Course Type (compulsory/optional)	Optional
Cycle (first/second/third)	Second
Year of study when the component is delivered	2021
Semester when the component is delivered	Fall/Spring
ECTS Credits	6
Name of lecturer	Jason Papathanasiou
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Office hours	Monday 10:00-12:00
Learning outcomes	<p>After the course the students should:</p> <ol style="list-style-type: none"> 1. have understood the basic principles of multi-criteria mathematical modeling, 2. learnt the use of some specialized software packages, 3. have practiced using MS Excel and Python, 4. be able to model real decision problems, 5. be able to plan the decision making process, 6. be able to coordinate a team for the group decision making process.
Mode of delivery (face-to-face/distance learning, etc.)	face-to-face
Prerequisites	The course participants should have a basic understanding of Linear Programming.
Course Content	Decision problems, such as those of classification, ranking and optimal choice between a set of alternative actions, are common in the modern business environment and almost always the decision maker has to take into account many conflicting and different criteria. The problems, whether they concern the strategic, the tactical or the daily business level of decision making, are often very complex and the ideal solution in most cases is impossible. The primary goal of the course, therefore, is to familiarize students with a number of methodologies of multi-criteria decisions analysis for administrative decisions.
Recommended or required reading	<ol style="list-style-type: none"> 1. Jason Papathanasiou and Nikolaos Ploskas. "Multiple Criteria Decision Aid. Methods, Examples and Python Implementations". Series: Springer Optimization and Its Applications, Volume 136, hardcover ISBN: 978-3-319-91646-0, 190 pages, Springer 2018. 2. Frada Burstein and Clyde Holsapple (editors). "Handbook on Decision Support Systems 1". Series: International Handbooks on Information Systems, hardcover ISBN: 978-3-540-48712-8, 854 pages, Springer 2008.

	<p>3. Jason Papathanasiou, Nikolaos Ploskas and Isabelle Linden (editors). "Real-World Decision Support Systems". Series: Integrated Series in Information Systems, hardcover ISBN: 978-3-319-43915-0. 327 pages, Springer 2016.</p> <p>4. Jason Papathanasiou, Pascale Zaraté, Jorge Freire de Sousa (eds). "EWG-DSS 30 Years: A tour on the DSS developments over the last 30 year. EWG-DSS 30 Years Anniversary Special Edition". Series title "Integrated Series in Information Systems", Hardcover ISBN 978-3-030-70376-9, number of pages VIII, 342. Springer 2021.</p> <p>5. Johansson, R. "Numerical Python. A practical techniques approach for Industry". Springer, 2015.</p> <p>6. Linge, S. and Langtangen, H. P. "Programming for Computations - Python. A gentle introduction to Numerical Simulations with Python". Springer, 2016.</p>
Other learning resources	<p>Scientific Journals:</p> <ol style="list-style-type: none"> 1. European Journal of Operational Research (Elsevier) 2. Decision Support Systems (Elsevier) 3. International Journal of Multicriteria Decision Making (Inderscience) 4. Operational Research (Springer)
Planned learning activities	<p>During the course the students will focus in understanding the basic concepts of multi-criteria decision theory and more specifically the following methods:</p> <ol style="list-style-type: none"> 1. Goal Programming 2. Revised Simos methodology 3. Analytic Hierarchy Process (AHP) 4. Preference Ranking Organization METHod for Enriched Evaluation (PROMETHEE) 5. Technique of Order Preference Similarity to the Ideal Solution (TOPSIS) <p>The following software packages will be demonstrated: MS Excel (Solver), Visual Promethee, Expert Choice.</p> <p>In the first classes there will also be a gentle introduction in the Python programming language as follows:</p> <ol style="list-style-type: none"> 1. Introduction to Python I (installation, editors, variables, etc) 2. Introduction to Python II (data structures, functions, I/O) 3. Arrays and scientific programming with Python (packages: numpy, scipy)
Teaching methods	<p>The course will be conducted in the MBA computer lab.</p>

Assessment methods and criteria	The evaluation of the course takes place at the end of the semester, in the laboratory. Students are asked to develop exercises in MS Excel and / or Visual PROMETHEE, Expert Choice, Right Choice, Anaconda Python and submit at the end of the exam a folder containing the files with their answers. Students are informed during the course about the assessment process and are free to see the files they submitted after the exam, after consultation with the instructor. Also taken into account in the final grade is their overall performance and participation in the classes during the semester.
Language of Instruction	English