

## ABS0305 – Management Science II

Course Title	MANAGEMENT SCIENCE II			
Course Code	ABS0305			
Course Type	Elective			
Level	Bachelor (1st Cycle)			
Year / Semester	4/Spring			
Teacher's Name	Prof. Eleni Hadjiconstantinou / Dr Petroula Mavrikiou / Dr Marios Charalambides			
ECTS	6	Lectures / week	3	Laboratories / week
Course Purpose	<p>The purpose of this course is to introduce students to the basic knowledge of the theory of Project Management, and provide them with adequate knowledge to apply techniques and practices in the business environment of project management. During the course students develop the ability to apply project management techniques, and how to use them in order to take decisions for solving business problems. Students are expected that by the end of the course will be able to identify and use their knowledge in project management as an adequate tool in the business environment, identify the functional area of the project management of an organization, be able to present, analyse and structure a problem of an enterprise and design a solution given their knowledge in project management.</p>			
Learning Outcomes	<ul style="list-style-type: none"> <li>• Understand and draw network diagrams and apply critical path analysis and project scheduling with fixed or uncertain activity times.</li> <li>• Apply crashing activity times using linear programming models for the crashing decisions.</li> <li>• Understand and explain decision tree analysis -tree diagrams and payoff tables. Apply and analyse decision making without probabilities (optimistic, pessimistic and minima regret approaches)</li> <li>• Apply and interpret decision making with probabilities and perform sensitivity analysis. Calculate and explain the expected value of perfect information.</li> <li>• Understand Game theory. Matrix games, strategies, optimum strategies and the value of the game. Strictly determined games. 2X2 matrix games. 2xM and Mx2 games.</li> <li>• Understand, apply and interpret Inventory control systems, EOQ model, Economic production lot size, and Inventory models with planned shortages.</li> <li>• Apply, analyse and synthesize the above concepts in business related problems.</li> </ul>			

	<ul style="list-style-type: none"> <li>Formulate problems for more complicated situation such as transportation, and the assignment problem. Solve complicated linear programming problems using the Simplex method.</li> </ul>		
Prerequisites	AMAT106 AMAT210	Corequisites	None
Course Content	<ul style="list-style-type: none"> <li>Network diagrams, critical path analysis, project scheduling with certain and uncertain activity times. Economic and time programming.</li> <li>Considering Time-Cost trade-offs. Crashing activity times. Linear programming models for crashing decisions.</li> <li>Decision tree analysis-Tree diagrams and payoff tables. Decision making without probabilities (optimistic, pessimistic and minima regret approaches), Decision making with probabilities. Sensitivity analysis. Expected value of perfect information.</li> <li>Game theory. Matrix games, strategies, optimum strategies and the value of the game. Strictly determined games. 2X2 matrix games. 2xM and Mx2 games. Graphical method, MxM games.</li> <li>Inventory control systems, EOQ model. Economic production lot size. Inventory models with planned shortages. Quantity discounts for the EOQ model</li> </ul>		
Teaching Methodology	<p>The course is structured around lectures and tutorials on topics related to project management. During the lectures, students are encouraged to participate in discussions and class work. At the same time, students are given problems and exercises to solve at home. Lecture notes and other course material are available to students through the e-learning platform.</p> <p>In addition, during classwork students are given problems and exercises to solve using excel and other open source software to get a hands-on experience on application of the different techniques under study.</p>		
Bibliography	<p><u>(a) Textbooks</u> Anderson D.R., Sweeny D.J., Williams T.A., Camm J.D., Cochran J.J. An Introduction to Management Science, Quantitative Approaches to Decision Making 14th Edition, Cengage Learning South-Western Publications 14 Edition (2020).</p> <p><u>(b) References</u> Taylor B.W., Introduction to Management Science, Pearson 13<sup>th</sup> Edition (2019)</p>		
Assessment	<p>Students are assessed with the Coursework which is consisted of two Mid-term exams that carries 40% weight, and a Final exam which carries 60% weight.</p>		
Language	<p>English</p>		