MODULE **DESCRIPTOR**

MODULE TITLE	OPERATIONAL RESEARCH		
MODULE CODE	MA3875 (L6)	**CREDIT VALUE**	10 CREDITS/5ECTS
CAMPUS	UCLAN CYPRUS		
SCHOOL	SCHOOL OF SCIENCE		

MODULE **AIMS**

The aim of this module is to introduce to students methods for solving constrained optimization problems. Apart from lagrangian methods, the module will focus on linear programs and how they can be solved using for example the simplex method or other methods in more special circumstances such as in zero-sum games and in network optimization problems.

MODULE **CONTENT**

Linear Programming: simplex algorithm, duality, sensitivity analysis.

Lagrangian Methods: Lagrange multipliers, Lagrangian sufficiency theorem, duality.

Two-person zero-sum games: mixed strategies, minimax theorem, Nash equilibria.

Network problems: transportation and assignment, maximum flow, shortest path.

INTENDED **LEARNING OUTCOMES**

On successful completion of this module a student will be able to:	
1.	Apply the simplex algorithm and duality to solve linear programming problems.
2.	Formulate decision problems into linear programs.
3.	Solve problems involving constraints using Lagrangian methods.
4.	Formulate decision problems into network problems and use graph algorithms to solve them.
5.	Apply the theory of two-person zero-sum games for real life problems.

TEACHING **METHODS**

The class contact will consist of teaching classes together with workshops. Teaching classes will introduce new material and provide examples. Tutorials have no new material introduced. Students will attempt problems during the tutorials. Key elements of the learning strategy are regular sessions during which problems are attempted. Throughout the week students will be given a list of problems to attempt.

ASSESSMENT **METHODS**

The module is assessed through a Written Exam.