

COURSE OUTLINE

(1) GENERAL

SCHOOL	SCHOOL OF INFORMATION SCIENCES & TECHNOLOGY		
ACADEMIC UNIT	DEPARTMENT OF STATISTICS		
LEVEL OF STUDIES	1st Cycle (UNDERGRADUATE)		
COURSE CODE	6153	SEMESTER	5 th
COURSE TITLE	Introduction to Operational Research		
INDEPENDENT TEACHING ACTIVITIES		WEEKLY TEACHING HOURS	CREDITS
Lectures		4	7
Workshops		2	
Labs			
COURSE TYPE	Elective – General Knowledge		
PREREQUISITE COURSES:			
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	GREEK		
IS THE COURSE OFFERED TO ERASMUS STUDENTS			
COURSE WEBSITE (URL)	https://www.dept.aueb.gr/en/stat/content/introduction-operations-research-7-ects		

(2) LEARNING OUTCOMES

Learning outcomes
After successfully attending the course, the students will be able to solve linear programming problems graphically, with algebraic methods, with the Simplex method and with Excel. They will also be able to find the optimal policy that minimizes the total expected cost for finite-time horizon problems using the method of dynamic programming. They will also be able to find optimal replenishment policies for inventory problems.
General Competences
• Search, analysis and synthesis of data and information, using the necessary technologies • Adaptation to new situations • Decision-making • Autonomous work • Work in an interdisciplinary environment • Respect for diversity and multiculturalism • Respect for the natural environment • Demonstration of social, professional and ethical responsibility and sensitivity to gender issues

- Exercise of criticism and self-criticism
- Promotion of free, creative and inductive thinking

(3) SYLLABUS

The linear programming problem, examples, solution by graphical method, canonical form, properties of solutions, The Simplex algorithm, the M-method, the dual problem of linear programming, sensitivity analysis, the transition problem, the integer programming problem, the dynamic programming problem, the machine maintenance problem, the replacement problem, the Secretary problem. Dynamic Programming, Game theory.

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY <i>Face-to-face, Distance learning, etc.</i>	Face-to-face	
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY	YES	
TEACHING METHODS	Activity	Semester workload
	Lectures	130
	Studying and Analyzing Bibliography	15
	Assignment	30
	Course Total	175
STUDENT PERFORMANCE EVALUATION	Written examination at the end of the semester Information is available at the Study Guide.	

(5) ATTACHED BIBLIOGRAPHY

• Δ. Φακίνος, Α. Οικονόμου, «Εισαγωγή στην Επιχειρησιακή Έρευνα», Εκδόσεις Συμμετρία, 2003. • Hillier F., S., Lieberman G.J., Εισαγωγή στην Επιχειρησιακή Έρευνα, Τόμος Α', Τεύχος Α', Εκδόσεις Παπαζήσης, 1985. • F. S. Hillier, G. J. Lieberman, "Introduction to Operations Research", McGraw-Hill, 2005.
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