



Меѓународен Универзитет Визион - International Vision University  
 Universiteti Ndërkombëtar Vizion - Uluslararası Vizyon Üniversitesi

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## SYLLABUS

COURSE NAME	COURSE CODE	SEMESTER	COURSE LOAD	ECTS
OPERATIONAL RESEARCH	CEN-4004	7	150	5

<b>Prerequisite(s)</b>	None
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<b>Course Language</b>	Macedonian, Turkish, English
<b>Course Type</b>	Elective
<b>Course Level</b>	First Cycle
<b>Course Lecturer</b>	
<b>Course Assistants</b>	
<b>Classroom</b>	
<b>Extra-Curricular Office Hours and Location</b>	

<b>Course Objectives</b>	The aim of this course is to enable students to teach model construction in decision analysis, solution of the problems in decision analysis, necessary techniques for a constructed model, to explore the validity of that model and to interpret the results of the solution for that model.
<b>Course Learning Outcomes</b>	<ul style="list-style-type: none"> <li>• To provide students skill of modeling a problem by linear programming model</li> <li>• To enable students to learn the methods of linear programming like graphic solution method and simplex algorithm,</li> <li>• To enable students to understand the usage and limits of the simplex algorithm,</li> <li>• To enable students to apply sensitivity analysis for modeled problems by linear programming,</li> <li>• To enable students to explore linear programming in various problems by using a software package,</li> <li>• To enable students to model transportation and assignment problems by using suitable optimization algorithms,</li> <li>• To enable students to know decision theory and decision making approaches,</li> <li>• To enable students to solve decision problems related with game theory.</li> </ul>
<b>Course Contents</b>	In this course description and historical development of Operational Research, Solution methods of linear programming, sensitivity analysis, transportation and assignment problems, giving basic information about the decision analysis and game theory, the creation of relevant models and solutions will be examined.

## WEEKLY SUBJECTS AND RELATED PREPARATION STUDIES

<b>Week</b>	<b>Subjects</b>	<b>Related Preparation</b>
1	Introduction to Operations Research	Related Chapters of Course Sources
2	Linear Programming (LP) problems and modelling	Related Chapters of Course Sources
3	Examination of LP models	Related Chapters of Course Sources
4	Solution methods of LP models	Related Chapters of Course Sources
5	The graphical solution of LP problems	Related Chapters of Course Sources
6	The solution of LP Problems with Simplex Method	Related Chapters of Course Sources
7	Mid-term Exam	Related Chapters of Course Sources
8	Simplex Method- Maximization model applications	Related Chapters of Course Sources
9	Sensitivity analysis and applications	Related Chapters of Course Sources
10	Transportation models: The northwest corner method, the minimum cell cost method, Vogel's Approximation Model (VAM)	Related Chapters of Course Sources
11	Transportation models application	Related Chapters of Course Sources
12	Assignment models and its applications	Related Chapters of Course Sources
13	Decision analysis and its applications	Related Chapters of Course Sources
14	Game theory and its applications	Related Chapters of Course Sources
15	Final Exam	Related Chapters of Course Sources

**ECTS / WORKLOAD TABLE**

Presentation / Seminar			
Hours for off-the-classroom study (Pre-study, practice)	14	3	42
Midterm Exam	1	12	12
Final examination	1	14	14
<b>Total Work Load</b>			
<b>ECTS</b>		<b>6</b>	

**GENERAL PRINCIPLE RELATED WITH COURSE**

Dear students,

In order to be included, learn and achieve full success that you deserve in the courses you need to come well prepared by reading the basic and secondary textbooks. We are expecting from you carefully to obey to the course hours, not to interrupt the lessons unless is very indispensable, to be an active participant on the courses, easily to communicate with the other professor and classmates, and to be interactive by participating to the class discussions. In case of unethical behavior both in courses or on exams, will be acting in framework of the relevant regulations. The attendance of the students will be checked in the beginning, in the middle or at the end of the lessons. Throughout the semester the students who attend to all lectures will be given 15 activity-attendance points in addition to their exam grades.

**SOURCES****COMPULSORY LITERATURE**

No	Name of the book	Author's Name, Publishing House, Publication Year
1	Yöneylem Araştırması ( Introduction to Operations Research)	Taha H.A., (Çeviren) Ş. Alp Baray, Şakir Esnaf, Ekin Kitabevi, 2004
2	Introduction to operations	Frederick s. Hillier, Gerald J. Lieberman
3		

**ADDITIONAL LITERATURE**

No	Name of the book	Author's Name, Publishing House, Publication Year
1		
2		
3		

## EVALUATION SYSTEM

<b>Underlying the Assessment Studies</b>	<b>NUMBER</b>	<b>PERCENTAGE OF GRADE</b>
Attendance/Participation	15	%10
Project / Event	1	%20
Mid-Term Exam	1	%35
Final Exam	1	%35
<b>TOTAL</b>	<b>17</b>	<b>%100</b>

## ETHICAL CODE OF THE UNIVERSITY

In case of the students are cheating or attempt to cheat on exams, and in the case of not to reference the sources used in seminar studies, assignments, projects and presentations, in accordance to the legislations of the Ministry of Education and Science of Republic of Macedonia and International Vision University, will be applied the relevant disciplinary rules. International Vision University students are expected never to attempt to this kind of behavior.