

OSTİM TECHNICAL UNIVERSITY ENGINEERING FACULTY

IENG 202 – OPERATION RESEARCH I COURSE CURRICULUM FORM 2022-2023

IENG 202 – Operation Research I							
Course Name	Course Code	Period	Hour	Application Time	Lab Time	Credit	ECTS
Operation Research I	IENG 202	4	4	0	0	4	5

Precondition	No
Language of the Course	English
Type of the Course	Compulsory
Course Level	Bachelor Degree
Method of Teaching	Face to face, Online
Course Learning and Teaching Techniques	Lecture, Question and Answer, Application

The Aim of Course

The use of linear programming and mathematical modeling as a decision-support tool for effective management (problem solving-decision making) in today's organizations.

Course Content

Ability to model real life problems, find optimal solutions and perform scenario/sensitivity analysis.

Weekly Topics and Related Preparation Studies					
Week	Topics	Preliminary			
1	Introduction (Basic concepts)				
2	Models (DP Formulation, Input-Output-Network-Diet Models)				
3	Graphical Solution and Simplex Method				
4	Simplex Method (Matrix Format of Standard DP, Vector Representations for Basic)				
5	Simplex Method (Phase I solution of Corrected Simplex)				
6	Simplex Method (Phase II solution of Corrected Simplex)				
7	Special Cases for Simplex(Unlimited Solv., Inappropriate Solv., Alternative Solv., Corruption)				
8	Midterm Exam				
9	Duality (Primal-Dual Problems, Strong and Weak Duality Properties)				
10	Duality (Complementary Slackness Theorem, Economic Interpretation of Duality)				
11	Sensitivity Analysis (Changing the Right Sides of Constraints)				
12	Sensitivity Analysis (Changing Cost Factors, Adding a New Variable / Constraint)				



13	Integer Linear Programming	
14	Branch Bound Algorithm in Integer Linear Model Solution	
15	Duality (Primal-Dual Problems, Strong and Weak Duality Properties)	
16	Final Exam	

Resources (Textbook and Supplementary Books)

Turkish Resources

1. Öztürk A., "Yöneylem Araştırması", Ekin Kitabevi, (2004). Foreign Resources

Taha H.A., "Yöneylem Araştırması", Literatür Yayıncılık (çev. Alp Baray ve Şakir Esnaf), (2000).
Winston W.L., Albright S.C., "Practical Management Science", Duxbury Press, Wadsworth Inc., (2001).

Evaluation System				
Studies	Number	Contribution Margin		
Continue				
Laboratory				
Application				
Field Study				
Course Specific Internship (if applicable)				
Quizzes/Studio/Critical				
Homework				
Presentation				
Projects				
Report				
Seminar				
Midterm Exams/Midterm Jury	1	% 40		
General Exam/Final Jury	1	% 60		
	Total	% 100		
Contribution to the Success Grade of Mid-Semester Studies		% 40		
Contribution of End of Semester Studies to Success Grade		% 60		
	Total	% 100		

Course Category			
Basic Vocational Courses	Х		
Specialization/Field Courses			
Support Lessons			
Communication and Management Skills Lessons			
Transferable Skills Lessons			



Relation of Course Learning Outcomes and Program Qualification							
No	Program Qualifications / Outcomes		Contribution Level				
NO			2	3	4	5	
1	Ability to design, conduct experiments, collect data, evaluate and interpret results for the analysis and solution of Industrial Engineering problems.					x	
2	To be able to use course information in solving industrial engineering problems.					x	
3	Acquisition of analytical thinking skills				Х		
4	Ability to use information technologies required for Industrial Engineering applications.			х			
5	Having an up-to-date and sufficient background in engineering, mathematics, science and social sciences related to industrial engineering; To be able to use the theoretical and applied knowledge in these fields together in solving industrial engineering problems.					x	

ECTS/Workload Table					
Activities	Number	Duration (Hours)	Total Workload		
Lesson hours (Including the exam week: 16 x total lesson hours)	16	4	64		
Laboratory					
Application					
Course Specific Internship					
Field Study					
Out of Class Study Time	16	4	64		
Presentation/Seminar Preparation					
Projects					
Reports					
Homeworks					
Quizzes/Studio Critic					
Preparation Time for Midterm Exams/Midterm Jury	1	16	16		
Preparation Time for the General Exam/General Jury	1	16	16		
Total Workload	(160/3	30 = 5)	160		