Management Information Systems			
Bachelor	TR-NQF-HE: Level 6	QF-EHEA: First Cycle	EQF-LLL: Level 6

Course Introduction and Application Information

Course Code:	YBS210
Course Name:	Operations Research 1
Semester:	Spring
Course Credits:	ECTS: 4
Language of instruction:	Turkish
Course Condition:	
Does the Course Require Work Experience?:	No
Type of course:	Compulsory Courses
Course Level:	Bachelor | TR-NQF-HE:6. Master`s Degree | QF-EHEA:First Cycle | EQF-LLL:6. Master`s Degree
Mode of Delivery:	Face to face
Course Coordinator:	Doç. Dr. ŞEBNEM ÖZDEMİR
Course Lecturer(s):	
Course Assistants:	

Course Objective and Content

Course Objectives:	This course is the first step in modeling and optimizing real-life systems. It aims to introduce students to linear programming problems (LPP) and to teach the solution methods of different LPPs. Students will also be familiar with concepts such as sensitivity analysis and duality and will learn to apply LP to problems such as networking, assignment, and transport.
Course	Introduction to Model Building, Linear Programming, and Graphical Solution, Basic Linear

Content:	Algebra, Simplex Algorithm, Sensitivity Analysis and Duality, Transportation and Assignment Problems, Network Models

Learning Outcomes

The students who have succeeded in this course;

1) After completing this course students will learn, model Building.

2) After completing this course students will learn, Linear Programming and Graphical Solutions, Basic Linear Algebra, Simplex Algorithm, Sensitivity Analysis and Duality, Transportation and Assignment Problems.

3) After completing this course students will learn, network Models.

Course Flow Plan

Week	Subject	Related Preparation
1)	Introduction to Model Building	
2)	Linear Programming and Graphical Solution	
3)	Linear Programming and Graphical Solution -Cont.	
4)	Basic Linear Algebra	
5)	Simplex Algorithm	
6)	Simplex Algorithm – Cont.	
7)	Sensitivity Analysis	
8)	Midterm Exams	
9)	Sensitivity Analysis	
10)	Sensitivity Analysis and Duality	
11)	Sensitivity Analysis and Duality	
12)	Transportation and Assignment Problems	
13)	Network Models	
14)	Network Models	
15)	Review	
16)	Final Exams	

Sources

Course Notes / Textbooks:	Required Texts: - Winston, W.L. (2004). Operations Research: Applications and Algorithms, 4th Ed., Thomson Learning. - Hillier F.S. and Lieberman, F.S. (2015). Introduction to Operation Research, 10th Edition, McGraw-Hill Education. - Topçu, Y.İ. and Kabak, Ö. (2018). Yöneylem Araştırması I Ders Notları (1-2). Reference Textbook - Taha, H.A (2017). Operations Research: An Introduction, 10th (Global) Edition, Pearson. - Baray, Ş.A. (2017). Yöneylem Araştırması. ("Taha, H.A (2017). Operations Research: An Introduction" 6. Basımdan Çeviri).
References:	Ek bir kaynağa gerek duyulmamaktadır. - No additional source is required.

Course - Program Learning Outcome Relationship

Course Learning Outcomes	**1**	**2**	**3**
Program Outcomes			
1) It has a wide range of interdisciplinary approaches to management information systems, primarily business and computer engineering.	1	1	1
2) Comprehends the management information systems in terms of technical, organizational and managerial aspects and uses the current programming language by knowing the logic of programming.	1	1	1
3) Uses different information technologies and systems for understanding and solving various business problems.	2	2	2
4) Interpret the data, concepts and ideas in the field of management information systems with scientific and technological methods.	3	3	3
5) Analyze the needs for an information system and analyze the processes of analysis, design and implementation of the database.	2	2	2
6) Gains technical and managerial contributions to IT projects and takes responsibility.	1	1	1
7) Solve complex business and informatics problems by using various statistical techniques and numerical methods and make analyzes using statistical programs effectively.	3	3	3
8) Uses a foreign language at the B1 General Level in terms of European Language Portfolio criteria according to the level of education.	1	1	1
9) Develops teamwork, negotiation, leadership and entrepreneurship skills.	3	3	3
10) Has universal ethical values, social responsibility awareness and sufficient legal knowledge.	1	1	1

Course Learning Outcomes			
11) Develops positive attitudes related to lifelong learning and identifies individual learning needs and carries out studies to correct them.	3 1	3 2	3 3
12) Students will be able to communicate their ideas and solutions both written and orally, and present and publish them on both national and international platforms.	1	1	1
13) It uses information and communication technologies together with computer software at the advanced level of European Computer Driving License required by the field.	1	1	1

Course - Learning Outcome Relationship

No Effect	1 Lowest	2 Average	3 Highest

	Program Outcomes	Level of Contribution
1)	It has a wide range of interdisciplinary approaches to management information systems, primarily business and computer engineering.	3
2)	Comprehends the management information systems in terms of technical, organizational and managerial aspects and uses the current programming language by knowing the logic of programming.	1
3)	Uses different information technologies and systems for understanding and solving various business problems.	2
4)	Interpret the data, concepts and ideas in the field of management information systems with scientific and technological methods.	2
5)	Analyze the needs for an information system and analyze the processes of analysis, design and implementation of the database.	
6)	Gains technical and managerial contributions to IT projects and takes responsibility.	2
7)	Solve complex business and informatics problems by using various statistical techniques and numerical methods and make analyzes using statistical programs effectively.	3
8)	Uses a foreign language at the B1 General Level in terms of European Language Portfolio criteria according to the level of education.	1
9)	Develops teamwork, negotiation, leadership and entrepreneurship skills.	2
10)	Has universal ethical values, social responsibility awareness and sufficient legal knowledge.	
11)	Develops positive attitudes related to lifelong learning and identifies individual learning	2

	needs and carries out studies to correct them.	
12)	Students will be able to communicate their ideas and solutions both written and orally, and present and publish them on both national and international platforms.	1
13)	It uses information and communication technologies together with computer software at the advanced level of European Computer Driving License required by the field.	2

Assessment & Grading

Semester Requirements	Number of Activities	Level of Contribution
Homework Assignments	1	% 30
Midterms	1	% 30
Final	1	% 40
total		**% 100**
PERCENTAGE OF SEMESTER WORK		% 60
PERCENTAGE OF FINAL WORK		% 40
total		**% 100**

Workload and ECTS Credit Calculation

Activities	Number of Activities	Workload
Course Hours	15	30
Quizzes	7	14
Midterms	7	22
Final	8	35
Total Workload		**101**