Course Syllabus

Code - Course Title	**İŞL353U - Business Decision Models**
Course Type	V. SEMESTER
Laboratory + Practice	0+0
ECTS	**5.0**
Language of Instruction	İngilizce
Course Type	Elective Courses
Course Instructor(s)	ASSIST. PROF. DR. BİLAL SARAÇ

Mode of Delivery	Online Education
Prerequisites	There are not any prerequisites and co-requisites for this course.
Courses Recomended	Recommended optional programme components are YBS401U Operations Research and YBS202U Business Analytics.
Recommended Resources	Recommended reading list are as below:Taha. H.A. (2007). Operations Research: An Introduction, 8th ed., Pearson/Prentice Hall, New Jersey, USA.Hillier. F. and Liebermen. G.J. (2004). Introduction to Operations Research, 5th ed., McGraw-HillHigher Education.Winston. W.L. (2003). Operations Research: Applications and Algorithms, 3rd ed., CengageLearning, USA.Balakrishnan, N., Render, B. & Stair, R.M. (2007). Managerial decision modeling with spreadsheets,Second Edition, Prentice Hall, New Jersey.Dewhurst, F. (2006). Quantitative methods for business and management, Second Edition, McGraw-Hill,USA.Monahan, G.E. (2000). Management decision making spreadsheet modeling, analysis and applications, Cambridge University Press, Cambridge.Timor, M. (2010). Yöneylem araştırması, Türkmen Kitabevi, İstanbul.Anderson, D. R., Sweeney, D. J., Williams, T. A., Camm, J. D., Cochran, J. J., Fry, M. J. & Ohlmann, J. W. (2016). Quantitative Methods for Business (Thirteenth Edition), Change Learning, USA.Evans, J. R. (2007). Statistics, Data Analysis & Decision Modeling (Third Edition), Prentice Hall, NewJersey.Wisniewski, M. (2006). Quantitative Methods for Decision (Fourth Edition), Prentice Hall, England.Ronald. R.L. (2018). Optimization in Operations Research. 2nd ed..Pearson-India.Barron, Emmanuel N. (2013). Game Theory: An Introduction (Second Edition), John Wiley & Sons Inc., New Jersey.Gardner, R. (2003). Games for Business and Economics (Second Edition), John Wiley & Sons Inc., New Jersey.Rasmusen, E. (2007). Games and Information: An Introduction to Game Theory, Blackwell Publishing.Ching, Wai-Ki & Ng, Michael, K. (2006). Markov Chains: Models, Algorithms and Applications,Springer, USA.Durrett, R. (2016). Essentials of Stochastic Processes (Third Edition), Springer, Switzerland.Kayran, Ahmet H. & Yücel, Mehmet N. (2014). Olasılık Teorisi ve Stokastik Süreçler, PapatyaYayıncılık Eğitim, Istanbul.
Work Placement	There is not any internship/application for this course.

Course Syllabus

Weeks	Learning Outcomes	Topics	Teaching Methods
Week - 1		The Concept of Decision Making; Common Characteristics of Decision Making; Decision Making Process; Types of Decision Making Environments: Decision making under certainty, Decision making under uncertainty, Decision making under risk.	

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Weeks	Learning Outcomes	Topics	Teaching Methods
Week - 2		Decision Making Under Uncertainty;Methods for Decision Making Under Uncertainty: Equally likely (laplace), Criterion of optimism (plunger), Criterion of pessimism (wald), Criterion of realism (hurwicz), Minimax regret (savage).	
Week - 3		Decision Making Under Risk: Expected value (or expected monetary value) criterion, Expected opportunity loss criterion, Maximum probability criterion; Expected Value of Perfect Information; Decision Tree: Structure of a decision tree, Constructing and evaluating a decision tree; Bayes' Theorem.	
Week - 4		Linear Programming Basics: Terminology, taxonomy, and assumptions;Modeling With Linear Programming: Agricultural planning, Nutrition problem, Production planning, Inventory control, Manpower planning, Logistics management, Portfolio investments; Graphical Solution of Two Variable-Linear Programs.	
Week - 5		Solving problems for midterm exam	
Week - 6		Solving problems for midterm exam	
Week - 7		Midterm exam	
Week - 8		Transition from Graphical to Algebraic Solution; The Algebra of Simplex Method; Simplex Method in Tabular Form.	
Week - 9		The Transportation Model: Duality, the concept and the properties, The economic interpretation of the dual model, The dual of the transportation model, Optimality test for the transportation model using the properties of duality; The Solution Method for the Transportation Model: Initialization methods, Test for optimality, Iteration; The Solution Method for the Assignment Model.	
Week - 10		Basic Terminology and Classification of Games: Basic concepts of game theory, Classification of games; Two-Person Zero-Sum Games: Mixed Strategies, Optimal mixed strategies and value of a 2×2 zero-sum game, Dominance strategies; Graphical Solution of 2xn and mx2 Games.	
Week - 11		Stochastic Processes; Markov Property and Markov Chains: Transition matrix, Transition diagram, N-step transition matrix, Regular transition matrix; Classification of States: Transient and recurrent states, Periodic and aperiodic states, Absorbing states; Steady-State Behavior of Markov Chains.	
Week - 12		Solving problems for final exam	
Week - 13		Solving problems for final exam	
Week - 14		Final exam	

Learning Outcomes

#	Learning Outcome
1	Define the concept of decision making
2	Define the common characteristics of decision making
3	List the steps of decision making process
4	Explain the types of decision making environments
5	Explain the cases of decision making under uncertainty
6	Recognize different methods of decision making under uncertainty and make analyses with these methods
7	Explain the decision making under risk and the criterions used when decision making under risk
8	Define the expected value of perfect information
9	Describe the decision tree and components of it
10	Explain the Bayes' Theorem
11	Define the linear programming concept and its role in the operations research process, and evaluate the limitations in decision-making applications
12	Construct a linear model for a given problem
13	Solve a two-variable linear program on a plane
14	Explain the essence of simplex method in comparison with the other methods for solving linear models
15	Use the simplex method to solve a linear model with elementary algebraic operations
16	Solve a linear model with the simplex method in tabular form
17	Model a transportation problem and define the optimality condition by the concept of duality
18	Solve a modeled transportation problem
19	Model and solve an assignment problem
20	Define the game theory and related concepts of the game theory
21	Find optimal strategies of a two-person zero-sum game
22	Plot graphics of 2xn and mx2 games
23	Define the properties of a stochastic process and, explain the relationship between a stochastic process and a Markov chain
24	Specify a given discrete-time Markov chain in terms of a transition matrix
25	Determine whether states are recurrent or transient in simple cases,
26	Interpret the steady-state solution of a Markov chain

Sustainable Development Goals

No content has been provided.

Course Theme

No content has been provided.

AKTS Workload

Activity	Duration (Hour)	Count	Workload
Teorik Derse Katılım	0	0	0
Sınıf Dışı Çalışma (Ön Hazırlık & Pekiştirme Amaçlı)	0	0	0
Ödevler	0	0	0
Proje - Rapor - Sunum Hazırlama	0	0	0
Ara Sınav Hazırlığı (sınav süresi dahil)	0	0	0
Final Sınavı Hazırlığı (sınav süresi dahil)	0	0	0
Uygulama (Laboratuvar, Müzik/Enstrüman Uygulaması, Atölye/Saha Çalışması vb.)	0	0	0
Staj Uygulaması	0	0	0
		Calculated ECTS	**0**

Assessment Method and Passing Requirements

No content has been provided.

Assessment Method and Passing Requirements	Quamtity	Percentage (%)
1.Midterm Exam	1	30
Final Exam	1	70
	Sum (%)	**100**