Identification	**Subject (code, title, credits)**	**MGT 452 Data Analysis and Decision Making – 3KU credits (6ECTS)**
	Department	School of Economics and Management
	Program (undergraduate, graduate)	Undergraduate
	Term	Spring 2023
	Instructor	Elshad Mikayilov elshad.mikayilov@khazar.org
	Classroom/hours	Mashati Ganjavi 41
	Office hours	By appointment
Prerequisites	**BSA 215** Statistical Methods for Economics and Business	
Language	English	
Compulsory/Elective	Compulsory	
Required textbooks and course materials	Required Readings • Luiz Paulo Fávero, and Patrícia Belfíore, (2019) Data Science for Business and Decision Making	
Course website	N/A	
Course outline	• Students in this course should be able to understand and look through business decisions through the lenses of data and see whether decisions made in the context of a business match the predictable power of data, information and knowledge. The main assumption of this course is that businesses always operate in the circumstances of uncertainty and businesses intuitions can be informed or supported by the configuration and reconfiguration of data sets.	
Course objectives	• Appreciate that the collection and statistical analysis of data improves business decisions and reduces the risk of implementing solutions that waste resources and effort. • Select and deploy the correct statistical method for a given data analysis requirement. In particular, develop expertise in describing data, process management, hypothesis testing and model building. • Achieve a practical level of competence in building statistical models that suit business applications. • Recognize, develop and distinguish between models for cross-sectional analysis at a single point in time and models for time series analysis at multiple points in time. • Run a statistical software package and interpret outputs from the perspective of to go or not to go for business ideas. • Increase capability as a business manager to “think statistically” using data and use this capability to support and inform a business intuition. • Build sufficient skills to provide leadership in statistical methods for the staff in your area of responsibility.	
Learning outcomes	This course examines hotel management and operations such as: Learning Goal 1: Business Management Knowledge Students are able to identify and apply current knowledge of disciplinary and interdisciplinary theory and professional practice to general management and business within diverse situations Learning Goal 2: Critical Thinking Students are able to understand and identify, research and analyze complex issues and problems in business and develop appropriate solutions Learning Goal 3: Communication	

	Students are able to produce written documents and oral presentations that communicate effectively complex disciplinary ideas and information for the intended audience and purpose Learning Goal 4: Teamwork Students are able to participate collaboratively and responsibly in teams and to reflect upon their own contribution to the team and on the necessary processes and knowledge within the team to achieve specified outcomes Learning Goal 5: Responsible Business Students are able to appraise ethical, environmental and sustainability considerations in decision making and in practice in business.

Teaching methods	**Lecture**		+
	Group discussion		+
	Experiential exercise		+
	Case analysis		+
	Simulation		+
	Course paper		+
	Others		+
Evaluation	**Methods**	**Description and deadline**	**Percentage (%)**
	Mid Term		30
	Quiz-assignment		10
	Class Attendance		5
	Active Discussions		5
	Team Business Project		10
	Final Exam		40
	Total		100

Policy	**Attendance**: Students not meeting the expected level of Team Business Project Involvement and Active Discussion (students' performance measured in terms of the relevant questions they ask) will not be allowed to participate at final exam. **The quizzes** (two)**:** Multiple-choice questions quizzes are expected throughout the course each worth a total of 10 points based on multiple-choice questions, and one-open ended question. The questions will be based on class materials. **Project**: There will be a team business project in which they will be assigned to two current businesses (one will be online and the other offline). Students will work together to create special metrics of data relevant for a particular business and explain why those metrics are necessary to follow. The results will be presented in a group presentation to be delivered by all team members. **Team-based** essays will be developed as business summaries according to topics of discussion by team members using online tools such as a google platform or zoom apps demonstrating how businesses can be run without particular regard to traditional challenges. **Final exam** will be purely based on multiple-choice questions.

Tentative Schedule

Week	**Date/Day (tentative)**	**Topics**	**Chapters** Luiz Paulo Fávero, and Patrícia Belfíore, (2019) Data Science for Business and Decision Making
1		Describing and Visualizing Data Assignment 1 Distributed	1,2,3,4,
2		Monitoring Business Processes: Part 1	1,2,3,4,
4		**Quiz 1-** Types of Data in Business Context	1,2,3,4,

5		**Team Business Project starts**	
6		Hypothesis testing and confidence intervals	9,10,11,12
7		Binary and Multinomial Logistics Regression Models	13, 14
8		**Team-based take-home essay 1.**	
9		Cluster Analysis. Principal Components Analysis and Factorial Analysis. **Midterm exam**	14, 15, 16, 17
10		Regression Models for Count Data: Poisson and Negative Binomial	20, 21, 22, 23
		Quiz 2- Data Manipulations and Relevance Analysis in Business Context	
11		Non-parametric tests (recap)	22, 23
12		Introduction to Optimization Models: Business Problems Formulations and Modeling	21, 22, 23, 24
13		Integer Programming	20, 21
14		Network Programming.	22, 23, 24
15		Solution of Linear Programming Problems and Simulation and Risk Analysis.	23, 24
		Final Exam	