

<b>Identification</b>	<b>Subject (code, title, credits)</b>	<b>MATH 225 Mathematics for Economics and Business - 3KU/6ECTS credits</b>	
	<b>Department</b>	Mathematics	
	<b>Program</b>	Undergraduate	
	<b>Term</b>	Fall, 2024	
	<b>Instructor</b>	Ali Huseynli	
	<b>E-mail:</b>	ahuseynli@khazar.org	
	<b>Classroom/hours</b>	Monday: 15:20 – 16:50, Thursday: 11:50 - 13:20	
	<b>Office hours</b>		
<b>Prerequisites</b>			
<b>Language</b>	English		
<b>Compulsory/Elective</b>	Compulsory		
<b>Required textbooks and course materials</b>	<b>Core Textbooks:</b>  1. George Thomas, et al, Thomas' Calculus: Early Transcendental, 12th edition, Addison-Wesley (2010), ( <a href="http://libgen.org/">http://libgen.org/</a> ) 2. David C. Lay, Linear Algebra and its Applications. 4 <sup>th</sup> edition, 2012		
<b>Course outline</b>	A wide variety of problems from economics and business can be solved by using mathematical models. Equations and their graphs are used in studying costs, revenues, profit, and supply and demand. Numerous applications of mathematics are given throughout the course.		
<b>Course objectives</b>	To allow the students to use mathematical methods in solving different problems of economics and business.		
<b>Learning outcomes</b>	Students successfully completing this course should be able to · Understand mathematical language of modern economics and business; · Use mathematical methods and tools; · Apply some mathematical methods and tools to economic theories; · Interpret the results of the mathematical models.		
<b>Teaching methods</b>	<b>Lecture</b>		x
	<b>Group discussion</b>		x
	<b>Problem Solving</b>		x
	<b>Homework assignments</b>		x
<b>Evaluation</b>	<b>Methods</b>	<b>Date/deadlines</b>	<b>Percentage (%)</b>
	<b>Midterm Exam</b>		30
	<b>Class attendance</b>		5
	<b>Class activity</b>		5
	<b>Quizzes (2 quizzes with equal weight)</b>	17.10.2024 28.11.2024	20
	<b>Final Exam</b>		40
	<b>Total</b>		100

<b>Policy</b>	<p><b>Attendance and activity</b> The students are required to attend all classes as part of their studies and those having legitimate reasons for absence (illness, family bereavement etc.) are required to inform the instructor. However, this student is able to enter the second double hours without delaying. The attendance and participation will account for 5% of the total course grade, which depends on students' good class attendance and active participation in class discussions.</p> <p><b>Withdrawal (pass/fail)</b> This course strictly follows grading policy of the School of Economics and Management. Thus, a student is normally expected to achieve a mark of at least 60% to pass. In case of failure, he/she will be referred or required to repeat the course the following term or year. For referral, the student will be required to take examination scheduled by instructor.</p> <p><b>Assignments/quizzes</b> The overall course will consist of 2 quizzes, they will be held before midterm exam and after midterm exam. Total score for all quizzes is 20% with 10% for each.</p> <p><b>Cheating/plagiarism</b> Cheating or other plagiarism during the Quizzes, Mid-term and Final Examination will lead to paper cancellation. In this case, the student will automatically get zero (0), without any considerations.</p> <p><b>Professional behavior guidelines</b> The students shall behave in the way to create favorable academic and professional environment during the class hours. Unauthorized discussions and unethical behavior are strictly prohibited.</p>
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<b>Tentative Schedule</b>			
<b>Week</b>	<b>Date/Day (tentative)</b>	<b>Topics</b>	<b>Textbook/Assignments</b>
1	16.09.2023 19.09.2023	<ul style="list-style-type: none"> <li>• Vocabulary of functions: Function, graph, domain, range, increasing and decreasing functions. Linear functions, slope and intercepts.</li> </ul>	<b>Ch.1</b>
2	23.09.2023 26.09.2023	<ul style="list-style-type: none"> <li>• Limit of a Function and Limit Laws</li> <li>• One-Sided Limits</li> </ul>	<b>Ch.2.2, 2.4</b>
3	30.09.2023 03.10.2023	<ul style="list-style-type: none"> <li>• Limits Involving Infinity; Asymptotes of Graphs</li> <li>• Tangents and the Derivative at a Point</li> </ul>	<b>Ch.2.6, 3.1</b>
4	07.10.2023 10.10.2023	<ul style="list-style-type: none"> <li>• The Derivative as a Function</li> <li>• Differentiation Rules</li> </ul>	<b>Ch.3.2, 3.3</b>
5	14.10.2023 17.10.2023	<ul style="list-style-type: none"> <li>• The Derivative as a Rate of Change</li> <li>• Derivatives of Trigonometric Functions.</li> </ul>	<b>Ch.3.4,3.5 Quiz (10 pts)</b>
6	21.10.2023 24.10.2023	<ul style="list-style-type: none"> <li>• The Chain Rule</li> <li>• Implicit Differentiation</li> </ul>	<b>Ch. 3.6, 3.7</b>
7	28.10.2023 31.10.2023	<ul style="list-style-type: none"> <li>• Derivatives of Inverse Functions and Logarithms</li> <li>• Inverse Trigonometric Functions, Related Rates</li> </ul>	<b>Ch. 3.8, 3.9,3.10</b>
8	04.11.2023 07.11.2023	<b>Midterm Exam</b>	<b>Ch. 3.11</b>
9	11.11.2023 14.11.2023	<ul style="list-style-type: none"> <li>• Linearization and Differentials</li> <li>• Systems of linear equations.</li> <li>• Row reduction and Echelon forms.</li> </ul>	<b>1.1, 1.2</b>
10	18.11.2023 21.11.2023	<ul style="list-style-type: none"> <li>• Vector equations.</li> </ul>	<b>1.3, 1.4</b>

		<ul style="list-style-type: none"> <li>The matrix equation <math>Ax = b</math>.</li> </ul>	
11	25.11.2023 28.11.2023	<ul style="list-style-type: none"> <li>Solution sets of linear systems.</li> <li>Applications of linear systems</li> </ul>	<b>1.5, 1.6</b> <b>Quiz-2 (10 pts)</b>
12	02.12.2023 05.12.2023	<ul style="list-style-type: none"> <li>Matrix operations.</li> <li>The inverse of a matrix</li> </ul>	<b>2.1, 2.2</b>
13	09.12.2023 12.12.2023	<ul style="list-style-type: none"> <li>Characterizations of invertible matrices</li> <li>Introduction to determinants. Dimension and rank.</li> </ul>	<b>2.9</b> <b>3.1, 3.2</b>
14	16.12.2023 19.12.2023	<ul style="list-style-type: none"> <li>Cramer`s rule, volume and linear transformations.</li> <li>Practice</li> </ul>	<b>3.3</b>
15	23.12.2023 26.12.2023	<ul style="list-style-type: none"> <li>Vector spaces and subspaces.</li> <li>Null spaces, column spaces and liner transformations.</li> </ul>	<b>4.1, 4.2</b>
	<b>TBA</b>	<b>Final exam</b>	

This syllabus is a guide for the course and any modifications to it will be announced in advance.