

Identification	Subject	MATH 105, Calculus 2B, 6 ECTS	
	Department	Mathematics	
	Program	Undergraduate	
	Term	Fall, 2026	
	Instructor	Gulnar Akhundova	
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	Phone:	(+994 50) 253 71 73	
	Classroom/hours	Friday : 15:20-16:50,17:00-18:30	
Prerequisites	MATH 105- Calculus 2 B		
Language	English		
Compulsory/Elective	Required		
Required textbooks and course materials	Core Textbooks:		
	1. Thomas’ Calculus: Early Transcendental, 15th edition, Joel R.Hass, Maurice D.Weir,Christopher Heil (2020), (http://pearsonglobaleditions.com/) Supplementary book 2. University calculus.Early transcendentals,Fourth Edition,Joel R.Hass, Christopher Heil, Maurice D.Weir , (2020,by Pearson Education) (http://pearsonglobaleditions.com/).		
Course outline	In this subject we develop a method to calculate the areas and volumes of very general shapes using definite integrals. The integral is of fundamental importance in statistics, the sciences, and engineering. Here we will introduce three-dimensional coordinate systems and vectors, also. The course concerns the study of integration methods, definite integrals and their applications to evaluation areas, volumes, arc length, areas of surfaces of revolution, vectors, three-dimensional Coordinate Systems, limits and continuity in higher dimensions, partial derivatives.		
Course objectives	• Applications of Definite Integrals • Integrals and Transcendental functions • Techniques of Integration • Vectors and the Geometry of Space • Partial Derivatives		
Learning outcomes	By the end of the course the students should be able: • To find indefinite and definite integrals of functions • To find area between different simple curves • To apply the fundamental theorem of calculus • Vectors • Three-Dimensional Coordinate Systems • Limits and Continuity in Higher Dimensions, Partial Derivatives		
Teaching methods	Lecture		x
	Group discussion		x
	Experiential exercise		x
	Simulation		
	Case analysis		
	Course paper		x
	Others		
Evaluation	Methods	Date/deadlines	Percentage (%)
	Midterm Exam		30
	Case studies		
	Class Participation		5
	Quizzes		20 (4 quizzes)
	Project		
	Activity		5
	Laboratory work		
	Final Exam		40
	Others		
	Total		100

Policy	▪ Use of Generative AI Tools The use of generative artificial intelligence (GAI) tools is strictly prohibited in this course. The primary aim of the course is to develop students’ independent mathematical reasoning, problem-solving skills, and creative thinking. Students are therefore expected to complete all assignments and assessments independently without the use of GAI tools. If it is determined that a student has used generative artificial intelligence (GenAI) tools while completing assignments, one of the following measures may be applied: • Issuing an oral or written warning; • Requiring the resubmission of the assignment; • Reducing the grade for the assignment or assigning a zero (0). ▪ Preparation for class The structure of this course makes your individual study and preparation outside the class extremely important. The lecture material will focus on the major points introduced in the text. Reading the assigned chapters and having some familiarity with them before class will greatly assist your understanding of the lecture. After the lecture, you should study your notes and work on relevant problems and cases from the end of the chapter and sample exam questions. Throughout the semester we will also have many review sessions. These review sessions will take place during the regularly scheduled class periods. ▪ Attendance. Students who do not attend more than 25% of classes will not be allowed to take the exam. ▪ Withdrawal (pass/fail) This course strictly follows grading policy of the School of Science and Engineering. Thus, a student is normally expected to achieve a mark of at least 60% to pass. In case of failure, he/she will be required to repeat the course the following term or year. ▪ Cheating/plagiarism Cheating or other plagiarism during the Quizzes, Mid-term and Final Examinations will lead to paper cancellation. In this case, the student will automatically get zero (0), without any consideration. ▪ Professional behavior guidelines The students will behave in a way to create favorable academic and professional environment during the class hours. Unauthorized discussions and unethical behavior are strictly prohibited. ▪ Participation Every two non-participations of a student removes 1% out of his/her total percentage. ▪ Ethics Students should not arrive late to class. All cell phones must be turned off and stowed away before entering class. Use of any electronic devices is not allowed in the classroom and violators will be punished accordingly.		
Tentative Schedule			
Week	Date/Day (tentative)	Topics	Textbook/ Assignments

1	18.09.2026 18.09.2026	- Volumes Using Cross-Sections - Volumes Using Cylindrical Shells	Ch. 6.1, 6.2 / not assigned
2	25.09.2026 25.09.2026	- Arc Length - Practice	Ch. 6.3 / not assigned
3	02.10.2026 02.10.2026	- Areas of Surfaces of Revolution - Work and Fluid Forces	Ch. 6.4, 6.5/ not assigned
4	09.10.2026 09.10.2026	- Moments and Centers of Mass - Solving examples	Ch. 6.6/ not assigned Quiz (5 pts.)
5	16.10.2026 16.10.2026	- The Logarithm Defined as an Integral - Exponential Change and Separable Differential Equations	Ch. 7.1, 7.2/ not assigned
6	23.10.2026 23.10.2026	- Hyperbolic Functions - Relative rates of growth	Ch. 7.3,7.4/ not assigned
7	30.10.2026 30.10.2026	- Integration by parts - Trigonometric integrals	Ch. 8.1,8.2/ not assigned
8	06.11.2026 06.11.2026	- Trigonometric Substitutions - Integration of Rational Functions by Partial Fractions	Ch.8.3,8.4 / not assigned Quiz (5 pts.)
9	13.11.2026 13.11.2026	- Three-Dimensional Coordinate Systems - Vectors	Ch. 12.1,12.2 / not assigned
10	20.11.2026 20.11.2026	Midterm Exam - The Dot Product	Ch.12.3 / not assigned
11	27.11.2026 27.11.2026	- The Cross Product - Functions of Several Variables	Ch.12.4, 14.1/ not assigned
12	04.12.2026 04.12.2026	- Limits and Continuity in Higher Dimensions - Partial Derivatives	Ch. 14.2,14.3/ not assigned Quiz (5 pts.)
13	11.12.2026 11.12.2026	- The Chain Rule - Directional Derivatives and Gradient Vectors	Ch.14.4,14.5/ not assigned
14	18.12.2026 18.12.2026	- Tangent Planes and Differentials - Extreme values and Saddle points	Ch.14.6,14.7 /not assigned
15	25.12.2026 25.12.2026	- Taylor's formula for two variables - Practice	Ch.14.9 / not assigned Quiz (5 pts)
	TBA	Final Exam	

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