



UNIVERSITY OF MITROVICA “ISA BOLETINI”

Course Curriculum Model (Syllabus)

Faculty:	Faculty of Mechanical and Computer Engineering	
Department:	Computer Science and Engineering	
Level:	Bachelor	
Code of the course:	CSE201	
Course:	Mathematics II	
Course Status:	Mandatory	
Semester:	I	Summer
Number of hours per week:	2+2	
ECTS:	6	
Time / location:	Tuesday	
Year of studies:		
Lecturer:	Prof. asoc. dr Faton Merovci	
Assistant:	Ma.Arbëri Krasniqi, Phd Candidate	
Contact details:	Lecturer	Assistant
Email:	faton.merovci@umib.net	arberi.krasniqi@umib.net
Telefon:	044412263	

Course Description	This course introduces the fundamental concepts and methods of differential and integral calculus. It covers functions of a single variable, limits and continuity, differentiation and its applications, including tangents, normals, linearization, maxima and minima, and points of inflection. The course also includes Taylor and Maclaurin series and their convergence, indefinite and definite integrals, and techniques of integration such as substitution, integration by parts, and partial fractions. Further topics include applications of integration to area, arc length, volumes and surfaces of revolution, functions of several real variables, and an introduction to first- and second-order differential equations, with applications to growth and decay models.
Course Purpose / Course Goals	The purpose of this course is to introduce students to the fundamental ideas and techniques of differential and integral calculus of functions of one variable, and to extend these concepts to functions of several variables and basic differential equations. The course aims to develop analytical and problem-solving skills, to provide a solid foundation for further studies in mathematics, engineering, and computer science, and to support the application of calculus concepts to real-world problems.

Intended Learning Outcomes (ILOs)	Knowledge K1: Explain the concepts of limits, continuity, derivatives, and integrals of functions of one variable. K2: Describe Taylor and Maclaurin series, improper integrals, and criteria for convergence of series and integrals. K3: Understand basic concepts of multivariable functions and first- and second-order differential equations. Skills S1: Differentiate functions using limits and standard rules of differentiation. S2: Apply differentiation to analyze functions, including graph sketching, optimization problems, and related rates. S3: Evaluate definite and indefinite integrals using appropriate techniques, including substitution, partial fractions, and integration by parts. S4: Apply integration to compute areas, arc lengths, volumes, and surfaces of revolution. S5: Solve basic differential equations using separation of variables and model growth and decay processes. Competences C1: Analyze mathematical problems using differential and integral calculus techniques. C2: Model and solve practical problems involving rates of change, optimization, and accumulation. C3: Integrate calculus concepts and methods into further studies in mathematics, engineering, computer science, and related scientific fields.	
Program	weeks	Lecture
	<i>First week:</i>	Functions of a single variable. Elementary functions and their graphs.
	<i>Second week:</i>	Sequences. Limits of numerical sequences.
	<i>Third week:</i>	Limits of functions.
	<i>Fourth week:</i>	Continuity of functions of one variable.
	<i>Fifth week:</i>	Derivatives of functions. Basic theorems of differential calculus.
	<i>Sixth week:</i>	Applications of derivatives.
	<i>Seventh week:</i>	Concavity, asymptotes, and curve sketching.
	<i>Eighth week:</i>	First colloquium.
	<i>Ninth week:</i>	Graph sketching using derivatives.
	<i>Tenth week:</i>	Indefinite integrals.

	Eleventh week:	Integration of rational, irrational, and trigonometric functions.		
	Twelfth week:	Definite integrals. Applications to arc length.		
	Thirteenth week:	Applications of definite integrals: volumes and surface areas of revolution.		
	Fourteenth week:	Differential equations.		
	Fifteenth week :	Second colloquium.		
Literature	Principal literature: Hamiti, E.(2018). Matematika II, Shtëpia Botuese Libri Shkollor, Prishtinë. Shaska, T. (2017), Kalkulusi, Albanian Institute of Mathematics https://our.oakland.edu/bitstream/handle/10323/4607/Kalkulus-1.pdf?sequence=1 Recommended Literature: Stewart, James, Dan Clegg, and Saleem Watson. <i>Calculus: early transcendentals</i> . Cengage, 2021.			
Teaching methodology	Lectures, discussions, group work, exercises, homework assignments, and seminar papers.			
	Contribution to student workload (which should correspond to student learning outcomes - 1 ECTS credit = 25 hours)			
	Activity	Hours	Days/weeks	Total
	Lectures	2	15	30
	Exercise sessions (with TA)	2	15	30
	Practical work	-	-	-
	Office hours	-	-	-
	Fieldwork			
	Midterms, seminars	4	2	8
	Homework	2	12	24
	Self-study	3	15	45
	Final exam preparation	7	1	7
	Time spent in exams	3	1	3
	Projects, presentations, etc	3	1	3
	Total			150

Evaluation	Teaching methodology: (according to the Statute and Regulation for studies of UMIB)	
	Tests / Colloquia	40%
	Seminary work	20%
	Final exam	40%
	Student gets the passing grade by collecting 50% at least.	