

Subject code	Credits
MAT1022	6

Course title in Lithuanian

MATEMATIKA 2

Course title in English

MATHEMATICS 2

Short course annotation in Lithuanian (up to 500 characters)

Dalyko tikslas – supažindinti su matematinės analizės pagrindais. Kurse supažindinama su neapibrėžtinio, apibrėžtinio ir dvilypio integralo sąvokomis bei taikymais, eilučių tipais ir jų konvergavimo požymiais, interpoliavimo pagrindais, kompleksiniais skaičiais, Euklido algoritmu bei pirmos ir antros eilės diferencialinių lygčių sąvokomis ir sprendimo metodais.

Short course annotation in English (up to 500 characters)

This course aims to develop understanding in basic concepts of mathematical analysis. The course introduces concepts and applications of indefinite, definite and double integrals, types of series and their convergence tests, the basics of interpolation, complex numbers, Euclidean algorithm, concepts and solution methods of the first and second order differential equations.

Prerequisites for entering the course

Mathematics 1

Course aim

This course aims to develop understanding in basic concepts of mathematical analysis.

Content

No	Content (topics)
1.	The concept of indefinite integral. Direct integration. Integration by substitution. Integration by parts. Integration of rational functions. Integration of trigonometric functions.
2.	Area of a curvilinear trapezoid and the concept of definite integral. Properties of the definite integral. Newton–Leibniz formula. Integration by substitution for definite integrals. Integration by parts for definite integrals. Applications of definite integral. Numerical integration.
3.	Double integrals.
4.	Convergence of number series. Necessary condition for the convergence. Sufficient conditions for the convergence of the positive number series. Alternating series. Absolute convergence. Interval of convergence of the power series. Representation of functions as power series. Maclaurin and Taylor series.
5.	Polynomial and spline interpolation.
6.	Algebraic form and operations of complex numbers. Trigonometric form and operations of complex numbers. Exponential form and operations of complex numbers.
7.	Euclidean algorithm.
8.	Basic concepts of differential equations. First order differential equations with separable variables. First order homogeneous equations. First order linear equations. The simplest second order differential equations.

Distribution of workload for students (contact and independent work hours)

Lectures	45 hours
Practical work	30 hours
Individual students work	85 hours
Total:	160 hours

Structure of cumulative score and value of its constituent parts

Midterm exam – 25%, practical work (two tests) – 25%, final exam – 50%.

Recommended reference materials

No.	Publication year	Authors of publication and title	Publishing house	Number of copies in		
				University library	Self-study rooms	Other libraries
<i>Basic materials</i>						
1.	2008	Pekarskas V. Diferencialinis ir integralinis skaičiavimas I ir II dalys.	Technologija	58	8	
2.	2010	Pekarskas V. Trumpas matematikos kursas.	Technologija	20	2	
3.	2008	Kavaliauskas A.	Vilniaus	2	1	

		Aukštosios matematikos uždavinynas.	universiteto leidykla			
4.	2006	Atstupėnienė R., Kravčėnienė V. ir kt. Integralai ir diferencialinės lygtys (uždavinių sprendimai)	Technologija	13	2	
<i>Supplementary materials</i>						
1.	1997	Čiegis R., Būda V. Skaičiuojamoji matematika	TEV			

Course programme designed by

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