

Subject code	ECTS credits
MAT2005	6

Course title in Lithuanian

MATEMATINĖ ANALIZĖ 3

Course title in English

MATHEMATICAL ANALYSIS 3

Short course annotation in Lithuanian (up to 500 characters)

Igyjamos esminės matematinės analizės žinios, susipažįstama su kelių kintamųjų funkcijomis, kelių kintamųjų funkcijos riba ir tolydumu, kelių kintamųjų funkcijos dalinėmis išvestinėmis ir diferencialu, erdvinėmis kreivėmis ir paviršiais, kelių kintamųjų funkcijos ekstremumais, dviejų kintamųjų funkcijos sąlyginiais ekstremumais, mažiausių kvadratų metodu, erdvinės kreivės liestine ir normale, paviršiaus liečiamąją plokštumą ir normale, kryptine išvestine, gradientu, dvilypio ir trilypio integralų apibrėžimais, savybėmis, apskaičiavimu ir taikymu.

Short course annotation in English (up to 500 characters)

Acquired fundamental knowledge of basic concepts of mathematical analysis: functions of several variables, limits and continuity of functions of several variables, partial derivatives of functions of several variables, space curves and surfaces, extreme values of functions of several variables, least square method, double and triple integrals (definitions, properties, calculation and applications).

Prerequisites for entering the course

Mathematical analysis 1, Mathematical Analysis 2.

Course aim

Course aim is to provide knowledge of basic concepts of mathematical analysis.

Links between course outcomes, criteria of learning achievement evaluation, study methods and methods of learning achievement assessment

No	Course outcomes	Criteria of learning achievement evaluation	Study methods	Methods of learning achievement assessment
1	Knowledge and understanding of limits of the limits of functions of several variables.	Student demonstrates the ability to solve given limit of the functions of several variables.	Lectures, practical works, individual work, consulting	Mid-term exam, assessment of practical work
2	Provide knowledge on differentiation of functions of several variables.	Student demonstrates the ability to calculate partial derivative of the given functions of several variables.	Lectures, practical works, individual work, consulting	Mid-term exam, assessment of practical work
3	Provide knowledge on extrema of functions of several variables and its application.	Student demonstrates the ability to find extrema of the given functions of several variables.	Lectures, practical works, individual work, consulting	Final exam, assessment of practical work
4	Provide knowledge on double and triple integrals and its application.	Student demonstrates the ability to calculate the given double and triple integrals.	Lectures, practical works, individual work, consulting	Final exam, assessment of practical work

Links between study programme outcomes and course outcomes

Study programme outcomes	Running number of course outcome
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	1	2	3	4
Know and comprehend concepts and propositions of fundamental mathematical subjects, recognize and apply them solving practical/theoretical tasks	+	+	+	+
Identify the problem, collect and analyze real/theoretical data using various mathematical methods, tools and IT technologies		+	+	+
Operating with formal mathematical symbols and terms, determine mathematical connections between various mathematical quantities; conceive mathematical propositions and logical proofs, construct and prove new statements	+	+	+	+
Think logically and analytically, evaluate alternative ways of task solving and implement optimal solutions	+	+	+	+

Content

No	Content (topics)
1.	Limits of functions of several variables.
2.	Continuity of functions of several variables.
3.	Partial derivatives of functions of several variables.
4.	Higher order partial derivatives.
5.	Taylor's formula.
6.	Extrema of functions of several variables.
7.	Least square method.
8.	Directional derivative. Gradient of a function.
9.	Double integrals.
10.	Triple integrals.

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

Final written exam (50%), mid-term written exam (25%), assessment of two practical works (25%).

Recommended reference materials

No	Publication year	Authors of publication and title	Publishing house	Number of copies in		
				<i>University library</i>	<i>Self study rooms</i>	<i>Other libraries</i>
Basic materials						
1	1998	Misevičius E. Matematinė analizė. I d. (Mathematical Analysis, part 1)	Vilnius, TEV	65	2	
2	2001	Misevičius E. Matematinė analizė. II (Mathematical Analysis)	VU leidykla	34	2	
3	2005	Pekarskas V. Diferencialinis ir integralinis skaičiavimas. I d. (Differential and Integral Calculus)	Kaunas, Technologija	44	6	

4	2003	Pekarskas V. Diferencialinis ir integralinis skaičiavimas.II (Differential and Integral Calculus II)	Kaunas, Technologi ja	22	6	
<i>Supplementary materials</i>						
1	2007	Misevičius E. Matematinės analizės uždavinynas. I d. (Tasks for Mathematical Analysis I)	VU leidykla			
2	2009	Misevičius E. Matematinė analizės uždavinynas. II (Tasks for Mathematical Analysis II)	VU leidykla			

Course programme designed by

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