

DISCIPLINE DESCRIPTION

Higher mathematics

1	Specialized module	Higher mathematics
2	Specialty	1-26 03 01 "Information Resources Management"
3	Course of Study	1, 2
4	Semester	1, 2, 3
5	Credit units	4
6	Degree, title, full name of lecturers	PhD in Physical Mathematical Sciences, Associate Professor Ovseets M.
7	Objectives	Acknowledgement with terminology, mathematics and mathematical apparatus used in the construction of mathematical models of information resource management and the interpretation of the solutions obtained; development of skills and abilities to apply the studied mathematical and probabilistic models and schemes in specific situations of the subject area.
8	Prerequisites	Linear equations, vectors, lines and planes, functions, differential equations, series, probability, queuing systems.
9	Syllabus	<p>Complex numbers. Determinants and matrices. Systems of linear equations. Vectors and actions with them. Quadratic forms. Straight and plane. Number sequences. Differential and integral calculus of functions of one variable. Indefinite, definite and multiple integrals. Functions of variables. Numerical and functional series. Differential Equations. Random events and operations with them. Basic formulas and schemes of probability theory. Random variables and their characteristics. Selective method. Variational series. Reliability and Confidence Interval. Testing statistical hypotheses. The essence and types of regression. Estimating the significance of the equation and regression parameters. Markov chains. Queuing systems.</p> <p>As a result of discipline study students must:</p> <p><i>know :</i></p> <ul style="list-style-type: none"> - methods of vector algebra, linear algebra and analytical geometry; - the basics of differential calculus of functions of one variable; - the basics of integral calculus; - methods of analysis of sequences and series; - methods for solving ordinary differential equations; - Basics, axioms and schemes of probability theory; - basic laws and characteristics of distributions of random variables; - basic concepts and methods of statistical data processing; - methods for constructing statistical hypotheses and criteria for testing them; - basics of correlation and regression analysis; - basics of the theory of Markov chains and queuing systems; <p><i>be able to :</i></p> <ul style="list-style-type: none"> - apply integral and differential calculus when solving applied economic and management problems;

		<ul style="list-style-type: none"> - conduct research on numerical sequences and series; - solve ordinary differential equations; - solve probabilistic-theoretical and statistical problems; - carry out statistical analysis and data processing
10	References	<p>1. Булдык, Г.М. Высшая математика: курс лекций: для студентов экономических специальностей / Г. М. Булдык. - Минск: ФУАинформ, 2010. - 544 с.</p> <p>2. Булдык, Г.М. Сборник задач и упражнений по высшей математике. Для студентов экономических специальностей вузов, экономистов-практиков/ Г. М. Булдык. - Минск: ФУАинформ, 2009. - 320 с.</p> <p>3. Булдык, Г.М. Теория вероятностей и математическая статистика: учебное пособие. – Минск: «Вышэйшая школа», 2015. – 300 с.</p> <p>4. Булдык, Г.М. Высшая математика. Задачи и упражнения по теории вероятностей и математической статистике: Учебное пособие для студентов вузов. – Мн.: БИП, 2015. – 106 с.</p> <p>5. Остапенко, А.В. Высшая математика: курс лекций в 2-х ч.- Минск:Бип.-Ч.І.- 2020.- 135 с., Ч.ІІ.- 2020.-119 с.</p>
11	Teaching Methods	<p>The main programme material is presented in lectures and is consolidated in practical exercises. Some of the material is offered for self-study. Current control is carried out by questioning in practical classes, completing individual assignments.</p> <p>During each semester, control tests are provided.</p>
12	Tuition Language	Russian