

FUNDAMENTALS OF TECHNOMATHEMATICS

Title of Study Programme and Code		Type (compulsory/optional)	Cycle	Year of study when the component is delivered (if applicable)
Information Systems Engineering 6531EX043		Compulsory	1 st	1 st year
Semester/trimester when the component is delivered		Number of ECTS credits allocated	Language of instruction	Mode of delivery (face-to-face/e-learning/...)
1 st		6 ECTS	English	
Learning outcomes			Study methods	Assessment methods
After completion of the study subject, a student should be able to:			Lectures; Explanation of concepts; Analysis of problems solved; Individual solution of problems; Group tasks.	Written Exam; Tests; Defence of individual homework.
LO 1	Apply methods of complex numbers, linear algebra, differentiation and integration theory, differential equations, series of numbers and functions in the studies of model examples.			
LO 2	Choose and apply software equipment for solution of practical engineering problems.			
LO 3	Choose and apply software equipment for solution of practical engineering problems by numerical methods.			
LO 4	Know and to apply methods of linear algebra selecting the data transfer routes.			
LO 5	Apply the mathematical and computational skills in assessing the accuracy of the calculations using the correct measurement units and data presentation techniques.			
LO 6	Apply probability methods for collection, processing and research of information.			
LO 7	Apply digital data statistical analysis methods for research data analysis and interpretation of conclusions.			
Prerequisites (these courses must be successfully completed prior to taking this particular course)				
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Course content				
<ol style="list-style-type: none"> 1. Complex numbers. 2. Set theory. Functions and relationships. 				

3. Linear algebra.
4. Function derivatives and integrals.
5. Series of numbers and functions.
6. Fourier lines. Fourier transforms.
7. Differential equations.
8. Statistical characteristics of numerical data.

Recommended or required reading and other learning resources/tools

1. Croft A., Davison R. (2010). Mathematics for Engineers: A Modern Interactive Approach, 3/E. Prentice Hall: <http://catalogue.pearsoned.co.uk/educator/product/Mathematics-for-Engineers-Pack-3E/9781408263235.page>
2. K. Matthews (1991). Elementary Linear Algebra. Lecture notes: <http://www.numbertheory.org/book/>
3. Arthur L. Schoenstadt (2005). An Introduction to Fourier Analysis Fourier Series, Partial Differential Equations and Fourier Transforms: https://www.math.bgu.ac.il/~leonid/ode_9171_files/Schoenstadt_Fourier_PDE.pdf