

Course Syllabus

Academic year: 2018-2019

Institution	University of Petroșani
Faculty	Mechanical and Electrical Engineering
Field of study	Industrial engineering
Level	Bachelor
Program of study	Machine Building Technology

Course	Special Mathematics
Code	2BB3OD18
Year of study (semester)	II (III)
Number of hours	56
Number of credits	4
Professor	Professor eng.,Ph.D. KECS Wilhelm

No.	Topic
1.	Complex analysis. Complex functions of real and complex variables. Holomorphic functions. Elementary complex functions. Integral curvilinear in the complex plane. Cauchy's complete theorem and formula. Series of powers. Developed in the Taylor and Laurent series. Residue. The Residue Theorem. Applications of the residue theorem.
2.	Special functions. Functions $\Gamma(z)$ and $B(p, q)$. Functions of Bessel
3.	Whole transformations. Exponential Fourier transforms and Laplace. Applications.
4.	Fourier Series. Fourier series development of periodic functions with period 2π . Develop Fourier series of functions defined over the range $[-\ell, \ell]$. Fourier series development after cosines or sines of a defined function on $[0, \ell]$.
5.	Equations of mathematical physics. Equations with second quasi-linear partial derivatives. Classification and reduction to canonical form. The infinite vibrating rope. D'Alembert's formula. The finite vibrating rope. Method of separating variables. Heat propagation equation in bars.