

<b>STUDY MODULE DESCRIPTION FORM</b>		
Name of the module/subject <b>Mathematics</b>		Code <b>1010314311010340025</b>
Field of study <b>Power Engineering</b>	Profile of study (general academic, practical) <b>(brak)</b>	Year /Semester <b>1 / 1</b>
Elective path/specialty <b>-</b>	Subject offered in: <b>polish</b>	Course (compulsory, elective) <b>obligatory</b>
Cycle of study: <b>First-cycle studies</b>	Form of study (full-time, part-time) <b>part-time</b>	
No. of hours Lecture: <b>30</b> Classes: <b>30</b> Laboratory: <b>-</b> Project/seminars: <b>-</b>		No. of credits <b>5</b>
Status of the course in the study program (Basic, major, other) <b>(brak)</b>		(university-wide, from another field) <b>(brak)</b>
Education areas and fields of science and art <b>technical sciences</b>		ECTS distribution (number and %) <b>5 100%</b>
<b>Responsible for subject / lecturer:</b>  dr Jacek Gruszka email: jacek.gruszka@put.poznan.pl tel. 61 665 2320 Wydział Elektryczny ul. Piotrowo 3A 60-965 Poznań		
<b>Prerequisites in terms of knowledge, skills and social competencies:</b>		
1	<b>Knowledge</b>	Knowledge of mathematics of the secondary school
2	<b>Skills</b>	Ability to solve problems and mathematical modeling at the level of secondary school
3	<b>Social competencies</b>	Awareness of the need to broaden their competence, willingness to work together as a team
<b>Assumptions and objectives of the course:</b> 1. Learning algebraic structures and methods of linear algebra 2. Learning the methods and applications of differential and integral calculus of functions of one variable		
<b>Study outcomes and reference to the educational results for a field of study</b>		
<b>Knowledge:</b> 1. knows the rules of solving polynomials, exponentiation, and root in the set of complex numbers, - [K_W01+++] 2. know the concept of matrix, the method of elementary operations on matrices, rules of solving systems of linear equations and calculating the determinants - [K_W01+++] 3. knows the boundary term convergence of the series, the concept of derivative and calculation methods, the use of derivatives to C - [K_W01+++]		
<b>Skills:</b> 1. solve the equation of the second degree with complex coefficients, determine the trigonometric form of a complex number - [K_U06++ K_U07+++] 2. Perform addition and multiplication of matrices, calculate the inverse matrix, solve the system of linear equations, compute determinant - [K_U06++ K_U07+++] 3. calculate the derivative of a function of one variable, to examine the monotonicity intervals, calculate the extremes, expand the function in a Taylor and Maclaurin series - [K_U06++ K_U07+++] 4. calculate the indefinite integral, calculate the definite integral, determine field area, the length of the curve - [K_U06++ K_U07+++]		
<b>Social competencies:</b> 1. able to think and act strictly in the area of process description in technical sciences - [K_K07 ++]		

<b>Assessment methods of study outcomes</b>		
<p>Lecture</p> <p>? assess the knowledge and skills listed on the written exam of a problematic</p> <p>Classes:</p> <p>? knowledge test and rewarding than that for the accomplishment undue problems - solving</p> <p>? continuous evaluation for each course - short tests</p> <p>? assessment of knowledge and skills - tests.</p>		
<b>Course description</b>		
<p>Complex numbers - Gaussian form, trigonometric, Euler, exponentiation and roots, polynomials, roots of unity. Cash matrix - operations with matrices, inverse matrix, determinant of a square matrix, systems of linear equations and inequalities, the method of Gauss. Analytical Geometry in the plane-vectors, simple curves.</p> <p>Sequences - limitations, monotonicity, the limits of sequences, the number of e. Series of numbers - the concept of an infinite series, the sum of a number of criteria for convergence, power series. The concept features a complex function, the inverse function, limit and continuity of functions. Differential calculus of functions of one variable: the derivative of a function differentiable functions extremes, the second derivative - convexity, concavity, inflection points, higher order derivatives, Taylor's formula, differential, rule of de L'Hospital. Integral calculus of functions of one variable indefinite integral - basic methods of integration. Definite integral, Riemann integral and its applications.</p>		
<b>Basic bibliography:</b>		
<p>1. I. Foltyńska, Z.Ratajczak, Z. Szafranski, Matematyka dla studentów uczelni technicznych część 1, Wydawnictwo PP Poznan2000</p> <p>2. I. Foltyńska, Z.Ratajczak, Z. Szafranski, Matematyka dla studentów uczelni technicznych część 2, Wydawnictwo PP Poznan2000,</p> <p>3. T. Jurlewicz, Z. Skoczylas, Algebra liniowa 1, Oficyna wydawnicza GiS, Wrocław 2002 (i późniejsze),</p>		
<b>Additional bibliography:</b>		
<p>1. Stankiewicz W. Zadania z matematyki dla wyższych uczelni technicznych PWN Warszawa 2003</p>		
<b>Result of average student's workload</b>		
Activity	Time (working hours)	
<b>Student's workload</b>		
Source of workload	hours	ECTS
Total workload	125	5
Contact hours	75	3
Practical activities	50	2