STUDY MODULE DESCRIPTION FORM

Name of the module/subject **Mathematics**		Code **1010314411010340025**
Field of study **Power Engineering**	Profile of study (general academic, practical) **(brak)**	Year /Semester **1 / 1**
Elective path/specialty **-**	Subject offered in: **Polish**	Course (compulsory, elective) **obligatory**
Cycle of study: **First-cycle studies**	Form of study (full-time,part-time) **part-time**	

No. of hours				No. of credits
Lecture: **30** Classes: **30** Laboratory: **-** Project/seminars: **-**				**5**

Status of the course in the study program (Basic, major, other) **(brak)**	(university-wide, from another field) **(brak)**

Education areas and fields of science and art **technical sciences** **Technical sciences**	ECTS distribution (number and %**)** **5 100%** **5 100%**

Responsible for subject / lecturer:

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Prerequisites in terms of knowledge, skills and social competencies:

1	**Knowledge**	Knowledge of mathematics of the secondary school
2	**Skills**	Ability to solve problems and mathematical modeling at the level of secondary school
3	**Social competencies**	Awareness of the need to broaden their competence, willingness to work together as a team

Assumptions and objectives of the course:

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

Study outcomes and reference to the educational results for a field of study

Knowledge:

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+++]

Skills:

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+++]

Social competencies:

1. able to think and act strictly in the area of process description in technical sciences - [K_K07 ++]

Assessment methods of study outcomes

Lecture

?   assess the knowledge and skills listed on the written exam of a problematic

Classes:

?   knowledge test and rewarding than that for the accomplishment undue problems - solving

?   continuous evaluation for each course - short tests

?   assessment of knowledge and skills - tests.

Course description

Update 2017/18

Applied methods of education: lectures and practical lessons.

Interactive lectures with problems and questions for students. The activity of students is taken into account in valuation of them. Discussion during lectures is expected. Connections with others mathematical subjects are indicated.

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.

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.

Basic bibliography:

1. I. Foltyńska, Z.Ratajczak, Z. Szafrański, Matematyka dla studentów uczelni technicznych część 1, Wydawnictwo PP Poznan2000

2. I. Foltyńska, Z.Ratajczak, Z. Szafrański, Matematyka dla studentów uczelni technicznych część 2, Wydawnictwo PP Poznan2000,

3. T. Jurlewicz, Z. Skoczylas, Algebra liniowa 1, Oficyna wydawnicza GiS, Wrocław 2002 (i późniejsze),

Additional bibliography:

1. Stankiewicz W. Zadania z matematyki dla wyższych uczelni technicznych PWN Warszawa 2003

Result of average student's workload	
Activity	**Time (working hours)**
Student's workload	

Source of workload	hours	ECTS
Total workload	125	5
Contact hours	75	3
Practical activities	50	2