STUDY MODULE DESCRIPTION FORM

Name of the module/subject		Code
Mathematics		**1010311311010340025**
Field of study	Profile of study (general academic, practical)	Year /Semester
Power Engineering	**(brak)**	**1 / 1**
Elective path/specialty	Subject offered in:	Course (compulsory, elective)
-	**polish**	**obligatory**
Cycle of study:	Form of study (full-time,part-time)	
First-cycle studies	**full-time**	
No. of hours		No. of credits
Lecture: **2** Classes: **2** Laboratory: **-** Project/seminars: **-**		**4**
Status of the course in the study program (Basic, major, other)	(university-wide, from another field)	
(brak)	**(brak)**	
Education areas and fields of science and art		ECTS distribution (number and %)
technical sciences		**4 100%**

Responsible for subject / lecturer:

dr Wiesława Nowakowska
email: wieslawa.nowakowska@put.poznan.pl
tel. 61 665 2320
Wydział Elektryczny
ul. Piotrowo 3A 60-965 Poznań

Prerequisites in terms of knowledge, skills and social competencies:

1	**Knowledge**	Basic knowledge with range of secondary school.
2	**Skills**	Student is able to meet the challenges arising from the high school
3	**Social competencies**	Student understands the need and knows the possibility of studying (postgraduate courses, second-degree studies), improving language skills, professional, personal and social skills.

Assumptions and objectives of the course:

The recognizing methods and applications of differential and integral calculus of functions of single variable.

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

Knowledge:

1. To know basic calculus of complex numbers - [K_W01+++]
2. To know the concept of matrix and methods of operations on it and methods of solving systems of linear equations - [K_W01+++]
3. To understand the concept of limit of the sequence, derivative methods of it calculus and it applications - [K_W01+++]
4. To know methods of calculation indefinite integrals - [K_W01+++]

Skills:

1. Use basic calculus of complex numbers - [K_U06++ K_U07+++]
2. To calculate determinants, add, multiply and inverse matrix, solve systems of linear equations. - [K_U06++ K_U07+++]
3. To calculate the derivative. Find monotonicity, maxima, minima of functions of single variable - [K_U06++ K_U07+++]
4. To calculate indefinite and definite integrals, measures of areas, the length of curves, volumes and surface areas of solids of revolution - [K_U06++ K_U07+++]

Social competencies:

Assessment methods of study outcomes

Classes: tests during the semester and colloquium

Course description

Algebra of complex numbers. Trigonometric and algebraic form. Polynomials. Determinants. Definition and classification matrix. Inverse matrix. Row of the matrix. The Gauss-Jordan algorythm . Systems of linear equations. Methods for solving systems of linear equations. Limits. Derivative. Differentiation. Finding monotonicity, maxima, minima, concavity, convex and the points of inflection of functions. Integrals. Geometric interpretation of definite integrals. Applications of the definite integral: calculation of measures of areas, the length of curves, calculate volumes and surface areas of solids of revolution.

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	100	4
Contact hours	75	3
Practical activities	25	1