STUDY MODULE DESCRIPTION FORM

Name of the module/subject	Code
Mathematical analysis and linear algebra	**1010334411010344953**

Field of study	Profile of study (general academic, practical)	Year /Semester
Information 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	**part-time**

No. of hours	No. of credits
Lecture: **20** Classes: **16** Laboratory: **-** Project/seminars: **-**	**5**

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 %)

Responsible for subject / lecturer:

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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. The recognizing methods of investigation of infinite series and power series. The getting to know of matrix analysis and applying it to solving systems of linear equations.

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

Knowledge:

1. To understand the concept of limit of the sequence, divergence of the series, derivative and its applications - [K_W01++]
2. To know methods of calculation indefinite integrals - [K_W01++]
3. To understand the concept of matrix, to know methods of operations on it and methods of solving systems of linear equations - [K_W01++]

Skills:

1. To calculate the derivative. Find monotonicity, maxima, minima of functions of single variable. - [K_U01+]
2. To calculate indefinite and definite integrals - [K_U01+]
3. To calculate determinants, add, multiply and inverse matrix, solve systems of linear equations. - [K_U01+]
4. To represent functions by the power series - [K_U01+]

Social competencies:

Assessment methods of study outcomes

Lectures: written exam checking theoretic knowledge and ability it application in practical exercises.
Classes: tests during the semester

Course description

Sequences, infinite series and power series. Differential and integral calculus of functions of single variable. Applications of integrals. Determinants, matrix. systems of linear equations. Methods for solving systems of linear equations Complex numbers

Basic bibliography:

1. F. Leja, Rachunek różniczkowy i całkowy, PWN, Warszawa, 1978.
2. I. Foltyńska, Z. Ratajczak, Z. Szafrański, Matematyka, cz. I, II, III, Wyd. Politechniki Poznańskiej, Poznań, 2001.
3. T. Jurlewicz, Z. Skoczylas, Algebra liniowa 1, Oficyna wydawnicza GiS, Wrocław 2002 .
4. M. Gewert, Z. Skoczylas, Analiza matematyczna 1, Oficyna Wyd. GiS, Wrocław, 2006.

Additional bibliography:

1. Krysicki W., Włodarski L.: Analiza matematyczna w zadaniach. Część I, II, PWN, Warszawa, 2006.
2. Stankiewicz W.: Zadania z matematyki dla wyższych uczelni technicznych. Część I, II, PWN, Warszawa, 2006.

Result of average student's workload

Activity	Time (working hours)
1. Lectures	20
2. Classes	16
3. Consutations and exam	7
4. Preparation for classes	34
5. Preparation for exam	43

Student's workload

Source of workload	hours	ECTS
Total workload	120	5
Contact hours	36	2
Practical activities	16	0