POZNAN UNIVERSITY OF TECHNOLOGY

EUROPEAN CREDIT TRANSFER AND ACCUMULATION SYSTEM (ECTS)

pl. M. Skłodowskiej-Curie 5, 60-965 Poznań

COURSE DESCRIPTION CARD - SYLLABUS

Course name

Mathematics

Course

Field of study	Year/Semester
Aerospace Engineering	1/1
Area of study (specialization)	Profile of study
-	general academic
Level of study	Course offered in
First-cycle studies	polish
Form of study	Requirements
part-time	compulsory

Number of hours

Lecture	Laboratory classes	Other (e.g. online)
18	0	0
Tutorials	Projects/seminars	
18	0	

Number of credit points

5

Lecturers

Responsible for the course/lecturer:

dr inż. Agnieszka Szawioła

e-mail: : agnieszka.szawiola@put.poznan.pl

phone: 61 665 2712

Faculty of Control, Robotics and Electrical Engineering

Institute of Mathematics

Responsible for the course/lecturer:

Prerequisites

1. The basic mathematics of secondary school.

2. Logical thinking, learning with understanding, the use of textbooks.

3. Awareness of the purpose of learning and acquiring new knowledge.

Course objective

1. Getting to know the issues of algebra and geometry, differential and integral calculus and their application in geometry.

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Course-related learning outcomes

Knowledge

1. Has basic knowledge of mathematics including algebra, differential and integral calculus of functions of one variable.

2. Defines the basic concepts in the field of mathematics considered.

Skills

1. Can apply the learned sections of mathematics.

Social competences

1. He reliably acquires knowledge and acts honestly when verifying knowledge.

2. Understands the need for lifelong learning, can inspire others to learn.

3. Adheres to the principles of savoir-vivre.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Lecture:

Assessment on the basis of a written exam conducted during the exam session at the end of the semester. The assessment also takes into account the student's activity during classes.

Classes:

Assessment on the basis of 2 tests, class activity and homework assignments.

Programme content

Update 2020/2021

Complex numbers (algebraic, actions, trigonometric, 2nd order equations). Matrices and determinants (actions, properties). Systems of linear equations (Cramer's theorem). Geometry in three-dimensional space (definition of vector, scalar and vector product). Functions of one variable (Euler number, limit and continuity of functions, indeterminate symbols). Differential calculus of one variable function (derivation of a function; determination, interpretation, calculation, function extremes, de L'Hospital rule, function test). Indefinite integral (original function, integration of sum and product, integration by substitution and parts). Definite integral (determination, interpretation, properties, calculation of flat area fields).

Teaching methods

Applied learning methods: lectures and tutorials.

Lecture:

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At the lecture, the theory is supported by examples. The lecture is conducted in an interactive way with formulating questions towards students. Completed with self-solve tasks, which are verified and have an impact on the final grade.

Tutorials:

The exercises provide for an example solution of the task on the board together with the analysis of subsequent stages. The method of solving the problem by the students on the blackboard is reviewed by the lecturer. Homework to solve independently.

Bibliography

Basic

1. W. Krysicki, L. Włodarski, Analiza matematyczna w zadaniach, t. I, PWN, Warszawa 2006.

2. I. Foltyńska, Z. Ratajczak, Z. Szafrański, Matematyka cz. I i II, Wydawnictwo Politechniki Poznańskiej, Poznań 2001.

Additional

1. . M. Gewert, Z. Skoczylas, Analiza matematyczna 1, Oficyna Wydawnicza GiS, Wrocław 2006.

2. . H. Jurlewicz, Z. Skoczylas, Algebra liniowa 1, Oficyna Wydawnicza GiS, Wrocław 2006.

Breakdown of average student's workload

	Hours	ECTS
Total workload	100	5,0
Classes requiring direct contact with the teacher	36	3,0
Student's own work (literature studies, preparation for tutorials, preparation for tests and the final exam) [1]	64	2,0

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[1] delete or add other activities as appropriate