



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

Mathematics

### Course

Field of study

Engineering Management

Area of study (specialization)

Level of study

First-cycle studies

Form of study

full-time

Year/Semester

1/1

Profile of study

general academic

Course offered in

Polish

Requirements

compulsory

### Number of hours

Lecture

30

Laboratory classes

Other (e.g. online)

Tutorials

15

Projects/seminars

### Number of credit points

4

### Lecturers

Responsible for the course/lecturer:

Grzegorz Grzegorzczuk Ph.D.

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Responsible for the course/lecturer:

Faculty of Control, Robotics and Electrical

Engineering

ul. Piotrowo 3A, 60-965 Poznań

### Prerequisites

The basic knowledge obtained in high school.

The ability to think logically. The ability to mathematical description of simple problems.

The ability to work in groups.

### Course objective

The acquisition and consolidation of examples of basic mathematical concepts and acquire the ability to use the mathematical apparatus.



### Course-related learning outcomes

#### Knowledge

P6S\_WG\_11 Has knowledge of selected problems of higher mathematics.

P6S\_WG\_16 Knows the application of higher mathematics to solve technical problems.

#### Skills

P6S\_UW\_10 Can use the basic knowledge of higher mathematics as a tool in management.

P6S\_UW\_14 Can use mathematical apparatus in studies.

#### Social competences

P6S\_KO\_03 Understands and uses a formalized mathematical apparatus in management.

### Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Lectures: passing the semester is based on the grade of the exercises. The exam takes place at the end of the second semester - includes material from both semesters.

Tutorials: knowledge is verified on the basis of a 75-minutes test, which are realized at the end of the semester.

### Programme content

Elements of linear algebra:

- matrices and determinants,
- systems of linear equations,
- vectors, scalar and vector product,
- surface and straight line in space.

Functions of one variable:

- graphs of elementary and rational functions,
- function limits,
- inverse functions.

Differential calculus of one-variable functions.

### Teaching methods

Lecture: oral presentation with examples and formulas, which are presented using a visualizer.

Tutorials: presentation of sample tasks on the board followed by independent solving of similar examples by students.



## Bibliography

### Basic

Foltyńska, Z. Ratajczak, Z. Szafrąński, Matematyka dla studentów uczelni technicznych, cz. I, WPP Poznań 2000

### Additional

W. Krywicki, L. Włodarski, Analiza matematyczna w zadaniach, PWN Warszawa 1999

## Breakdown of average student's workload

	Hours	ECTS
Total workload	100	4,0
Classes requiring direct contact with the teacher	45	2,0
Student's own work (literature studies, preparation for tutorials, preparation for tests/exam) <sup>1</sup>	55	2,0

<sup>1</sup> delete or add other activities as appropriate