



## 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

English

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:

Ph.D., Grzegorz Grzegorzczak

Responsible for the course/lecturer:

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### 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

The student knows the methods and tools of data collection, their processing and the selection and distribution of information [P6S\_WG\_08]

The student knows the methods and tools of mathematics and their application to modeling processes and phenomena occurring in organizations [P6S\_WG\_09]

The student knows the basic methods, techniques and tools used to solve simple engineering tasks in the field of mathematics [P6S\_WG\_16]

The student has basic knowledge necessary to understand non-technical determinants of engineering activity [P6S\_WG\_18]

#### Skills

The student is able to use analytical, simulation and experimental methods to formulate and solve engineering tasks [P6S\_UW\_10]

The student is able to identify tasks and solve simple tasks in the field of mathematics [P6S\_UW\_14]

The student is able to apply typical methods of solving simple problems in the field of mathematics [P6S\_UW\_15]

#### Social competences

The student is able to prepare and implement business ventures [P6S\_KO\_03]

### Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Lecture: Knowledge acquired during the lecture is verified during one test on the last lecture. The final grade consists of a test grade (80%) and a grade for activity during classes (20%). Passing threshold: 50% of the points.

Tutorials: The knowledge acquired during the tutorials is verified during one test at the end of the semester. During the classes, students receive points for activity, 80% of the final grade is the result of the test, and 20% of points for activity. Passing threshold: 50% of the points.

### 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 exemplary tasks on the blackboard and individual solving of similar examples by students - practical exercises.

### Bibliography

Basic

Foltyńska, Z. Ratajczak, Z. Szafranski, Matematyka dla studentów uczelni technicznych, cz. I, Wydawnictwo Politechniki Poznańskiej, 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 laboratory classes/tutorials, preparation for tests, project preparation) <sup>1</sup>	55	2,0

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