



## 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

1/2

Profile of study

general academic

Course offered in

Polish

Requirements

compulsory

### Number of hours

Lecture

15

Laboratory classes

Other (e.g. online)

Tutorials

30

Projects/seminars

### Number of credit points

4

### Lecturers

Responsible for the course/lecturer:

Grzegorz Grzegorzczak

Responsible for the course/lecturer:

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Faculty of Control, Robotics and Electrical  
Engineering

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### Prerequisites

The basic knowledge obtained in the first semester.

The ability to think logically.

The ability to describe simple mathematical problems.

### 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\_16 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, P6S\_UW\_14 Can use the basic knowledge of higher mathematics as a tool in management.

P6S\_UW\_15 Can use mathematical apparatus in studies.

#### Social competences

P6S\_KO\_02 Understands the need of developing mathematical knowledge.

P6S\_KO\_03 Is aware of the need for lifelong learning.

### Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Knowledge acquired as part of the lecture is verified on the basis of a 90-minute "zero exam" on the 15th lecture. Students can also proceed to the exam during the exam session. Exam includes material from both semesters.

Skills acquired on tutorials are verified on the basis of two 75-minutes tests, which are realized on 7th and 14th meetings.

### Programme content

Integral calculus of functions of one variable:

- indefinite integral,
- definite integral,
- applications of definite integral,
- improper integral and numerical series.

Ordinary differential equations - introduction.

### 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, Szafrański, Ratajczak, Matematyka cz I, cz II, Wydawnictwo Politechniki Poznańskiej, Poznań 2004.

Additional

W. Krywicki, L. Włodarski, Analiza matematyczna w zadaniach 1, Wydawnictwo Naukowe PWN, Warszawa, 2013.

F. Leja, Rachunek różniczkowy i całkowy. Państwowe Wydawnictwo Naukowe, Warszawa 1978.

**Breakdown of average student's workload**

	Hours	ECTS
Total workload	125	5
Classes requiring direct contact with the teacher	45	2
Student's own work (literature studies, preparation for tutorials, preparation for tests/exam) <sup>1</sup>	80	3

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