



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

Mathematics [S1Arch1E>MAT]

### Course

Field of study

Architecture

Year/Semester

1/1

Area of study (specialization)

–

Profile of study

general academic

Level of study

first-cycle

Course offered in

English

Form of study

full-time

Requirements

compulsory

### Number of hours

Lecture

30

Laboratory classes

0

Other (e.g. online)

0

Tutorials

15

Projects/seminars

0

### Number of credit points

4,00

### Coordinators

dr Alina Gleska

dr Anita Biszof

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### Lecturers

dr Anita Biszof

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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:

Student knows and understands:

B.W4. mathematics, space geometry, statics, material strength, shaping, construction and dimensioning of structures, to the extent necessary to formulate and solve tasks in the field of architectural and urban design;

Skills:

Student can:

B.U3. use properly selected computer simulations, analyzes and information technologies, supporting architectural and urban design;

Social competences:

Student is capable of:

B.S2. reliable self-assessment, formulating constructive criticism regarding architectural and urban planning activities.

## Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

The series of lectures in mathematics is the theoretical foundation for other engineering subjects.

Lectures and exercises end with an independent tests.

Lectures: the exam takes place at the end of the semester.

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

There are two credit deadlines for each type of course, the second date being a make-up exam.

Assessment scale: 2,0; 3,0; 3,5; 4,0; 4,5; 5,0

Lecture:

Formative assessment:

periodic control of learning progress, active participation in classes

Accepted grading scale: 2,0; 3,0; 3,5; 4,0; 4,5; 5,0.

Percentage of grades: 0–50% - 2.0 (insufficient); 50-60% - 3.0 (sufficient); 60-70% - 3.5 (sufficient plus);

70-80% - 4.0 (good); 80-90% - 4.5 (good plus); 90-100% - 5.0 (very good).

Summative assessment:

a final test or (if an exam is included in the curriculum) a written exam

Accepted grading scale: 2,0; 3,0; 3,5; 4,0; 4,5; 5,0.

Percentage of grades: 0–50% - 2.0 (insufficient); 50-60% - 3.0 (sufficient); 60-70% - 3.5 (sufficient plus);

70-80% - 4.0 (good); 80-90% - 4.5 (good plus); 90-100% - 5.0 (very good).

Tutorials:

Formative assessment:

periodic control of learning progress (tests), active participation in classes

Accepted grading scale: 2,0; 3,0; 3,5; 4,0; 4,5; 5,0.

Percentage of grades: 0–50% - 2.0 (insufficient); 50-60% - 3.0 (sufficient); 60-70% - 3.5 (sufficient plus);

70-80% - 4.0 (good); 80-90% - 4.5 (good plus); 90-100% - 5.0 (very good).

Summative assessment:

a final test

Accepted grading scale: 2,0; 3,0; 3,5; 4,0; 4,5; 5,0.

Percentage of grades: 0–50% - 2.0 (insufficient); 50-60% - 3.0 (sufficient); 60-70% - 3.5 (sufficient plus);

70-80% - 4.0 (good); 80-90% - 4.5 (good plus); 90-100% - 5.0 (very good).

## Programme content

Elements of linear algebra:

Functions of one variable:

Differential calculus of one variable functions.

Integral calculus of one variable functions:

## Course topics

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.

Integral calculus of one variable functions:

- indefinite integral,
- definite integral,
- application of the definite integral,
- improper integral and series of numbers.

### 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

1. I. Foltyńska, Z. Ratajczak, Z. Szafranski, *Matematyka dla studentów uczelni technicznych*, cz. I i II, Wydawnictwo Politechniki Poznańskiej, 2002.

Additional

1. W. Żakowski, *Matematyka*, t. I, Wydawnictwa Naukowo-Techniczne, Warszawa, 2003.

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

### Breakdown of average student's workload

	Hours	ECTS
Total workload	100	4,00
Classes requiring direct contact with the teacher	45	2,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	55	2,00