



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

Mechanics\_1

### Course

Field of study

ARCHITECTURE

Area of study (specialization)

-

Level of study

First-cycle studies

Form of study

full-time

Year/Semester

I/1

Profile of study

general academic

Course offered in

polish/english

Requirements

compulsory

### Number of hours

Lecture

15

Laboratory classes

0

Other (e.g. online)

0

Tutorials

30

Projects/seminars

0

### Number of credit points

4

### Lecturers

Responsible for the course/lecturer:

dr inż. arch. Anna Sygulska e-mail:

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12 Wydział Architektury ul. J. Rychlewskiego 2,

61-131 Poznań, tel.: 061 665 32 60

Responsible for the course/lecturer:

dr inż. arch. Anna Sygulska,

dr hab. inż. Jacek Buśkiewicz

dr inż. Agnieszka Fraska

dr inż. Paweł Fritzkowski

### Prerequisites

1. Knowledge: Preparation from trigonometry and algebra. Vector calculations. Fundamentals of differential and integral calculus.

2. Skills: Solving trigonometric problems, adding, subtracting, multiplying vectors. Student can calculate derivatives and integrals for simple functions.

3. Social competences: Student is prepared to work actively in a group.

### Course objective

1. Preparation for the design and calculation of simple and complex building structures.

### Course-related learning outcomes

Knowledge



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;

B.W5. issues of construction, construction technologies and installations, construction and building physics, covering key issues in architectural, urban and planning design as well as issues related to fire protection of buildings;

#### Skills

B.U4. develop solutions for individual building systems and elements in terms of technology, construction and materials;

#### Social competences

### Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

1. Two tests during the semester.
2. Four design works to be passed, checked by the teacher, with active consultations.

#### Formative assessment:

Assessment of knowledge, computational skills and projects carried out during exercises. Final grading scale: 2.0; 3.0; 3.5; 4.0; 4.5; 5.0

#### Summative assessment:

The grade obtained during written tests and design works as well as the grade from the oral answer concerning the lectures.

Assessment scale: 2,0; 3.0; 3.5; 4.0; 4.5; 5.0

### Programme content

Vectors, forces, moments. Supports. Forces acting on a structure. Equations of static equilibrium. Calculation of support reactions in beams and frames. Construction of trusses and calculation of internal forces using the method of joints and method of sections. Calculation of internal forces (normal forces, shear forces and bending moments) in beams and statically determinate frames. Calculation of geometrical characteristics of sections.

### Teaching methods

1. Lecture.
2. Exercises based on the study of specific examples.



3. Projects - calculation example individual for each student, with active consultations with the teacher of the subject.

4. eLearning Moodle (a system supporting the teaching process and distance learning).

### Bibliography

Basic

Kenneth R. Lauer, Structural engineering for architects, McGraw-Hill Book Company 1981

Philip Garrison, Basic structures for engineers and architects, Blackwell Publishing 2005

Additional

### Breakdown of average student's workload

	Hours	ECTS
Total workload	100	4,0
Classes requiring direct contact with the teacher	50	3,0
Student's own work (literature studies, preparation for laboratory classes/tutorials, preparation for tests/exam, project preparation) <sup>1</sup>		

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