



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

Bridge construction

### Course

Field of study

Year/Semester

Civil engineering

I/6

Area of study (specialization)

Profile of study

general academic

Level of study

Course offered in

First-cycle studies

polish

Form of study

Requirements

full-time

compulsory

### Number of hours

Lecture

Laboratory classes

Other (e.g. online)

30

Tutorials

Projects/seminars

15

30

### Number of credit points

4

### Lecturers

Responsible for the course/lecturer:

Responsible for the course/lecturer:

Wojciech Siekierski

### Prerequisites

steel structures, concrete structures, strength of materials, structural mechanics

### Course objective

broadening the knowledge in the field of bridge construction and introducing the subject of underground structures

### Course-related learning outcomes

Knowledge

a) knows the rules of constructing and analyzing general, low-energy, passive, sustainable, industrial, road, bridge and railway buildings

b) has basic general knowledge of general infrastructure design and road and rail transport

c) knows the detailed principles of constructing and dimensioning elements and connections of metal, concrete, wooden and masonry buildings

Skills

a) is able to make a list of loads acting on building objects and perform a static analysis of statically



determinate and indeterminate bar structures; is able to determine the frequency of free vibrations for simple bar structures

b) is able to design selected elements and simple metal, concrete, wooden and brick structures, working individually or in a team

c) can perform classic static and dynamic analysis and stability analysis of rod structures (trusses, frames and tendons) statically determinate and indeterminate and surface structures (shields, plates, membranes and shells)

#### Social competences

a) is responsible for the reliability of the obtained results of his work and the work of his team

b) is ready to independently supplement and expand knowledge in the field of modern processes and technologies in construction

c) is aware of the need to improve professional and personal competences, is ready to critically evaluate the knowledge and content received

#### Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

lecture: written test; pass mark: 50% of points

exercises: test; pass mark: 50% of points

project: assessment of the correctness of the exercise performed

#### Programme content

shaping concrete beam-plate bridges, shaping steel beam-plate bridges, introducing into underground structures

#### Teaching methods

lecture: multimedia presentation supported by the content provided on the blackboard

exercises: multimedia presentation supported by the content given on the blackboard and carrying out the tasks given by the teacher - practical exercises

project: carrying out a task given by the teacher

#### Bibliography

Basic

Madaj A., Wołowicki W., Podstawy projektowania budowli mostowych, WKŁ, Warszawa, 2007

Madaj A., Wołowicki W., Projektowanie mstów betobnowych, WKŁ, Warszawa, 2010

Rzyżyński A., Wołowicki W., Skarżewski J., Karlikowski J., Mosty stalowe, WKŁ, Warszawa, 1985



Karlikowski J, Madaj A., Wołowicki W., Mosty zespolone stalowobetonowe, WKŁ, Warszawa, 2016

Additional

Karlikowski J., Sturzbecher K., Mosty stalowe – przewodnik od ćwiczeń projektowych, Wydawnictwo PP, Poznań, 1993

Karlikowski J., Sturzbecher K., Mosty belkowe i zespolone, Wydawnictwo PP, Poznań, 1998

Szczygieł J., Mosty z betonu zbrojonego i sprężonego, WKŁ, Warszawa, 1972

**Breakdown of average student's workload**

	Hours	ECTS
Total workload	120	4,0
Classes requiring direct contact with the teacher	75	2,5
Student's own work (literature studies, preparation for laboratory classes/tutorials, preparation for tests/exam, project preparation) <sup>1</sup>	45	1,5

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