COURSE DESCRIPTION CARD - SYLLABUS

Course name
Geotechnics and special foundations [S2Bud1-BDMiK>GiF]

Course

Field of study
Civil Engineering

Year/Semester
1/2

Area of study (specialization)
Road, Bridge and Railway Engineering

Profile of study
general academic

Level of study
second-cycle

Course offered in
Polish

Form of study
full-time

Requirements
compulsory

Number of hours

Lecture
30

Laboratory classes
15

Other
0

Tutorials
0

Projects/seminars
15

Number of credit points

3,00

Coordinators

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Lecturers

Prerequisites

Basic knowledge on building mechanics, soil mechanics and engineering geology

Course objective

Knowledge on types and technologies of foundations and soil improvement.

Course-related learning outcomes

Knowledge:
Has detailed knowledge of the rules of foundation engineering of complex building structures.

Skills:
Can design foundations and soil improvement in complicated soil conditions, for II and III structures category for road, bridge and railway structures.

Social competences:
Take responsibility for the reliability of working results and their interpretation.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Learning outcomes presented above are verified as follows:
Exam, soil improvement design project.

Programme content

Soil mechanics.
Assessment of subsoil's suitability for transport infrastructure construction, soil classification, its evaluation and field tests.
Soil strengthening methods - classification and method description, design and realisation.
Pile foundations - classification, description, design and realisation.
Retaining constructions - barrettes, sheet pile walls, description, design and realisation.
Examples of realisation - "case studies".
Geotechnical documentation.

Course topics

LECTURES:
1. Legal basis;
2. Introduction to geotechnics;
3. Identification of the subsoil, research programming, subsoil of road superstructure.
4. Construction of earth structures, subsoil load-bearing groups, methods of soil strengthening.
5.Pile technologies, deep foundation, barrets.
PROJECTS:
1. Design of subsoil reinforcement;
2. Barrettes design.
LABORATORIES:
1. Soils suitability tests.
2. Tests on the suitability of aggregates.
3. Design of layers reinforcing the subsoil.
4. Assessment of the suitability of building materials for construction of transport infrastructure.

Teaching methods

Lectures, design project, laboratory.

Bibliography

Basic
1. “Ground Improvement”. Klaus Kirsch, Alan Bell
2. “Fundamenty palowe – technologie i obliczenia” Kazimierz Gwizdała, PWN
3. “Fundamenty palowe – badania i zastosowania” Kazimierz Gwizdała, PWN
4. „Prefabrykowane pale wbijane” Kazimierz Gwizdała, Jakub R.Kowalski, PG
5. „Fundamentowanie, projektowanie posadowień” Czesław Rybak i inni.
Additional
1. „Wzmacnianie i uszczelnianie gruntu metodą mieszania in –situ”. Michał Topolnicki

Breakdown of average student's workload

	Hours	ECTS
Total workload	85	3,00
Classes requiring direct contact with the teacher	60	2,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	25	1,00