GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

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|---|---|---|---|
| Subject name and code | Geotechnics, PG_00047992 | | |
| Field of study | Environmental Engineering | | |
| Date of commencement of studies | October 2021 | Academic year of realisation of subject | 2023/2024 |
| Education level | first-cycle studies | Subject group | Optional subject group<br>Subject group related to scientific research in the field of study |
| Mode of study | Part-time studies | Mode of delivery | at the university |
| Year of study | 3 | Language of instruction | Polish |
| Semester of study | 5 | ECTS credits | 3.0 |
| Learning profile | general academic profile | Assessment form | assessment |
| Conducting unit | Department of Geotechnics, Geology and Marine Civil Engineering -> Faculty of Civil and Environmental Engineering | | |
| Name and surname of lecturer (lecturers) | Subject supervisor | dr inż. Angelika Duszyńska | |
| | Teachers | dr inż. Angelika Duszyńska | |

| Lesson types and methods of instruction | Lesson type | Lecture | Tutorial | Laboratory | Project | Seminar | SUM |
|---|---|---|---|---|---|---|---|
| | Number of study hours | 15.0 | 5.0 | 0.0 | 0.0 | 0.0 | 20 |
| | E-learning hours included: 0.0 | | | | | | |

| Learning activity and number of study hours | Learning activity | Participation in didactic classes included in study plan | Participation in consultation hours | Self-study | SUM |
|---|---|---|---|---|---|
| | Number of study hours | 20 | 4.0 | 55.0 | 79 |

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| Subject objectives | The aim of the course is to familiarize students with geotechnical design. |

## Learning outcomes

| Course outcome | Subject outcome | Method of verification |
|---|---|---|
| [K6_K02] understands the need to formulate and communicate to the public information and opinions on the achievements of environmental engineering and other aspects of the sanitary industry engineer's activity; is aware of the importance and understands the non-technical aspects and effects of engineering activities; makes efforts to provide such information and opinions in a widely understandable way, presenting different points of view | The student understands the non-technical aspects and effects of engineering activities in the field of geotechnics. | [SK5] Assessment of ability to solve problems that arise in practice |
| [K6_W04] possesses elementary knowledge in the field of land mechanics, ground science, land reclamation and geotechnics; has basic knowledge about the composition of air, water and soil, environmental pollution and processes responsible for their formation and ways to reduce them, knows the principles and organization of sustainable water management | The student identifies geotechnical conditions of building foundation. He describes the construction of excavation and selects the types of walls and drainage systems. Student identifies the types of direct and indirect foundations, describes the technology of their execution, and explains the basic principles of design. Student describes method of soil improvement. He distinguishes methods to provide the slope stability. | [SW3] Assessment of knowledge contained in written work and projects<br>[SW1] Assessment of factual knowledge |
| [K6_U16] can, when formulating and solving engineering tasks in environmental engineering, evaluate, select and apply appropriate methods and tools, recognize their non-technical aspects, including environmental, economic and legal aspects | Student prepares the project of selected sanitary structures foundations, taking into account environmental effects, legal requirements and economic aspects. | [SU3] Assessment of ability to use knowledge gained from the subject<br>[SU1] Assessment of task fulfilment |

## Subject contents

Geotechnical conditions of building foundation. Excavations construction, walls, drainage. Slope stability landslides, retaining structures. Geosyntetics in civil and environmental egineering. Direct foundations types, design principles, construction. Pile foundations types of piles, design principles, construction. Soil improvement. Non-excavation technologies of underground pipes. Landfills - construction and reclamation. Foundation problems of selected sanitary structures

## Prerequisites and co-requisites

## Assessment methods and criteria

| Subject passing criteria | Passing threshold | Percentage of the final grade |
|---|---|---|
| test | 60.0% | 60.0% |
| exercises | 60.0% | 40.0% |

## Recommended reading

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| Basic literature | 1. Bzówka J. i inni: Geotechnika komunikacyjna. Wydawnictwo Politechniki Śląskiej. 2012.<br><br>2. Pisarczyk S.: Geoinżynieria. Metody modyfikacji podłoża gruntowego, Oficyna Wydawnicza Politechniki Warszawskiej, Warszawa 2005.<br><br>3. PN-EN 1997-1 Eurokod 7: Projektowanie geotechniczne. Część 1: Zasady ogólne.<br><br>4. PN-B-06050 Geotechnika. Roboty ziemne |
| Supplementary literature | 1. Dąbska A., Gołębiewska A.: Podstawy geotechniki. Zadania według Eurokodu 7, Wydawnictwo: Politechnika Warszawska, 2012. |
| eResources addresses | Adresy na platformie eNauczanie:<br>Geotechnika IŚ niestacjonarne sem. 5 - zima 2023/24 - Moodle ID: 28605<br>https://enauczanie.pg.edu.pl/moodle/course/view.php?id=28605 |

## Example issues/ example questions/ tasks being completed

Calculations of tank foundation:
- Checking the Limit States: UPL and GEO,
- Checking the serviceability limit state (SLS).

## Work placement

Not applicable