COURSE DESCRIPTION CARD - SYLLABUS

Course name
Fundamentals of geology and geotechnics [S1IŚrod1>PGiG]

Course

Field of study
Environmental Engineering

Year/Semester
2/3

Area of study (specialization)
–

Profile of study
general academic

Level of study
first-cycle

Course offered in
polish

Form of study
full-time

Requirements
compulsory

Number of hours

Lecture
30

Laboratory classes
0

Other (e.g. online)
0

Tutorials
0

Projects/seminars
15

Number of credit points

3,00

Coordinators

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Lecturers

Prerequisites

Students have a basic knowledge of mathematics, physics, chemistry, geography, descriptive geometry, fundamentals of architecture and constructions, ecology, fundamentals of surveying.

Course objective

Gaining basic knowledge from geotechnical engineering and building upon this to deepen and to extend. Acquiring competences in geotechnical engineering, geology, ecology necessary to solve engineering problems which may appear as a result of the interaction of a building and its sanitary and heating networks with the ground, bearing in mind all the crucial elements of ecosystem.

Course-related learning outcomes

Knowledge:
1. The graduate has a knowledge of geology and geotechnics useful in formulating and solving simple problems in the field of environmental engineering.
2. The graduate has a basic knowledge of foundations of buildingsand constructions as well as placing heat and sanitary installations underground.
3. The graduate has a basic knowledge of developments trends in interaction tree-ground-construction.

4. The graduate has a basic knowledge to understand nontechnical conditions of engineering activity.
5. The graduate knows and understands Polish Standards.

Skills:
1. The graduate can get information from literature, databases and from other appropriately selected sources, also in English language in the field of geotechnics and geology.
2. The graduate can communicate using a variety of techniques in a professional environment of geotechnics and geologists.
3. The graduate has an ability of learning unaided.
4. The graduate knows the English equivalents of geotechnical terminology.

Social competences:
1. The graduate understands the need of lifelong learning and can inspireother people.
2. The graduate is aware of the importance and understanding non-technical aspects and results of the engineer's job, including its environmental impact and the resulting resposibility for all decisions made.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Lectures.
Credit is acquired through: presence in the classroom, component tests (x2). The total of all the points is then converted into the final grade.
During each lecture the activity of students is graded.
Projects.
A verbal defense of project during the last lesson.
Continuous grading for the duration of the course (activity bonuns).
Optional: additional written task.

Programme content

Lectures:
1. Soil classification. Macroscopic analysis.
2. Grain-size analysis.
3. Physical properties. Water in soils.
4. States of non-cohesive soils.
5. Consistency limits.
6. Foundations, excavations.
7. Compressibility, shear strength, initial stress.
8. Field tests.
9. Shrinkage and swelling of soils.
10. Slope stability. Mass movements.
11. Fundamentals of geology.
1. Macroscopic analysis.
2. Grain-size analysis.
3. Physical properties.
4. States of soils.
5. Slope stability or direct foundation.

Teaching methods

LECTURES:
-informational lecture,
-problem lecture,
-causerie,
-idea exchange,
-visual thinking and memorisation,
-supporting of pass the informations with music, pictures and jokes, -
individual work with didactic website www.tajnikigeotechniki.pl
-competition method.
PROJECTS:

-exercises,
-presentations,
-classic problem method,
-laboratory method,
-experience method.

Bibliography

Basic:
1. Gruntoznawstwo inżynierskie; Stanisław Pisarczyk, Wydawnictwo Naukowe PWN, (wydanie 2 !!), Warszawa 2014
2. Przewodnik do ćwiczeń z geologii. Nowe wydanie; Piotr Czubla, Włodz. Mizerski, PWN, Warszawa 2012
3. Geomorfologia; Piotr Migoń, PWN, Warszawa 2013
4. Fundamentowanie. Projektowanie posadowień; Czesław Rybak, Dolnośląskie Wydawnictwo Edukacyjne, Wrocław 2009
1. Geoinżynieria; Stanisław Pisarczyk, Oficyna Wydawnicza Politechniki Warszawskiej, Warszawa 2014
2. Geomorfologia; Mieczysław Klimaszewski, PWN, Warszawa 1995
3. Geotechnika w inżynierii sanitarnej; Jerzy Rzeźniczak, Wydawnictwo PP, Poznań 1979
4. Gruntoznawstwo budowlane; Jan Jeż, WPP, Poznań 2004
5. Biogeotechnika; Jan Jeż, WPP, Poznań 2008
6. Zarys geotechniki; Zenon Wiłun, WKŁ, Warszawa 2013
7. Fundamentowanie; Grabowski, Pisarczyk, Obrycki, OWPW, Warszawa 1999
8. www.tajnikigeotechniki.pl (strona dydaktyczna)

Additional:
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Breakdown of average student's workload

	Hours	ECTS
Total workload	75	3,00
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)	30	1,00