

| STUDY MODULE DESCRIPTION FORM | | |
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| Name of the module/subject Fundamentals of geology and geotechnics | | Code 1010134231010125180 |
| Field of study Environmental Engineering Extramural First- | Profile of study (general academic, practical) (brak) | Year /Semester 2 / 3 |
| Elective path/specialty - | Subject offered in: Polish | Course (compulsory, elective) obligatory |
| Cycle of study: First-cycle studies | Form of study (full-time, part-time) part-time | |
| No. of hours Lecture: 15 Classes: - Laboratory: - Project/seminars: 15 | | No. of credits 3 |
| Status of the course in the study program (Basic, major, other) (brak) | | (university-wide, from another field) (brak) |
| Education areas and fields of science and art | | ECTS distribution (number and %) |
| Responsible for subject / lecturer: dr inż. Tomasz Jeż email: tomasz.jez@put.poznan.pl tel. (61) 665 24 18 Faculty of Civil and Environmental Engineering ul. Piotrowo 5 60-965 Poznań | | |
| Prerequisites in terms of knowledge, skills and social competencies: | | |
| 1 | Knowledge | mathematics, physics, chemistry, geography, descriptive geometry, fundamentals of architecture and constructions, ecology, fundamentals of surveying |
| 2 | Skills | Practical aspects of the abovementioned areas. |
| 3 | Social competencies | Awareness of the necessity to advance, retain, extend and deepen professional and personal competences. |
| Assumptions and objectives of the course: 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. | | |
| Study outcomes and reference to the educational results for a field of study | | |
| Knowledge: 1. The graduate has a knowledge of geology and geotechnics useful in formulating and solving simple problems in the field of environmental engineering. - [K_W01] 2. The graduate has a basic knowledge of foundations of buildings and constructions as well as placing heat and sanitary installations underground. - [K_W02] 3. The graduate has a basic knowledge of developments trends in interaction tree-ground-construction. - [K_W05] 4. The graduate has a basic knowledge to understand nontechnical conditions of engineering activity. - [K_W08] 5. The graduate knows and understands Polish Standards. - [K_W10] | | |
| 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. - [K_U01] 2. The graduate can communicate using a variety of techniques in a professional environment of geotechnics and geologists. - [K_U02] 3. The graduate has an ability of learning unaided. - [K_U05] 4. The graduate knows the English equivalents of geotechnical terminology - [K_U06] | | |
| Social competencies: | | |

1. The graduate understands the need of lifelong learning and can inspire other people. - [K_K01]
 2. The graduate is aware of the importance and understanding non-technical aspects and results of the engineer - [K_K02]

Assessment methods of study outcomes

Lectures.

Credit is acquired through: presence in the classroom, component tests (x3) and the final test. The total of all the points is then converted into the final grade.

During each lecture the activity of students is graded.

Laboratories.

A written test during the last laboratory.

Continuous grading for the duration of the course (activity bonuses).

Optional: additional written task.

Course description

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.

Exercises:

1. Macroscopic analysis.
2. Grain-size analysis.
3. Physical properties.
4. States of soils.
5. Slope stability.

Basic bibliography:

1. "Gruntoznawstwo inżynierskie" Stanisław Pisarczyk, Wydawnictwo Naukowe PWN, (wydanie 2 !!), Warszawa 2014
2. "Przewodnik do ćwiczeń z geologii. Nowe wydanie" Piotr Czubła, Włodz. Mizerski, PWN, Warszawa 2012
3. "Geomorfologia" Piotr Migoń, PWN, Warszawa 2013
4. "Fundamentowanie. Projektowanie posadowień" Czesław Rybak, Dolnośląskie Wydawnictwo Edukacyjne, Wrocław 2009

Additional bibliography:

1. "Zarys geotechniki" Zenon Witun, WKŁ, Warszawa 2013
2. "Geoinżynieria" Stanisław Pisarczyk, Oficyna Wydawnicza Politechniki Warszawskiej, Warszawa 2014
3. "Geomorfologia" Mieczysław Klimaszewski, PWN, Warszawa 1995
4. "Geotechnika w inżynierii sanitarnej" Jerzy Rzeźniczak, Wydawnictwo PP, Poznań 1979
5. "Gruntoznawstwo budowlane" Jan Jeż, WPP, Poznań 2004
6. "Biogeotechnika" Jan Jeż, WPP, Poznań 2008
7. "Fundamentowanie" Grabowski, Pisarczyk, Obrycki, OWPPW, Warszawa 1999

Result of average student's workload

| Activity | Time (working hours) |
|----------|----------------------|
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| | | |
|---|--------------|-------------|
| 1. Attending lectures. | 15 | |
| 2. Attending project classes. | 15 | |
| 3. Preparing projects. | 10 | |
| 4. Homework (calculating projects, literature study, exercises, analyses) | 30 | |
| 5. Consultations. | 10 | |
| 6. Preparation for the final test. | 10 | |
| Student's workload | | |
| Source of workload | hours | ECTS |
| Total workload | 90 | 3 |
| Contact hours | 40 | 2 |
| Practical activities | 30 | 1 |