



COURSE DESCRIPTION CARD - SYLLABUS

Course name

Basics of geology [S1IŚrod2>PGI]

Course

Field of study

Environmental Engineering

Year/Semester

1/2

Area of study (specialization)

–

Profile of study

general academic

Level of study

first-cycle

Course offered in

Polish

Form of study

full-time

Requirements

elective

Number of hours

Lecture

15

Laboratory classes

15

Other

0

Tutorials

0

Projects/seminars

0

Number of credit points

2,00

Coordinators

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Lecturers

Prerequisites

KNOWLEDGE: Knowledge of high school graduate level in geography, chemistry and physics. Polytechnic level in descriptive geometry and basics of geodesy. SKILLS: The student knows basic rules occurring in nature, is able to synthesis obtained information, make their interpretation, come to conclusion, formulate and justify his own opinion. SOCIAL COMPETENCES: The student is able to work independently and cooperate in a group, is able to take responsibility for the effects of his work and expending of knowledge.

Course objective

Gaining basic knowledge from geotechnical engineering and building upon this to deepen and to extend. Achieving the necessary level of knowledge in the geology field enabling its use in the further course of studies in related subjects

Course-related learning outcomes

Knowledge:

- have knowledge in the fields of mathematics, physics, chemistry, biology and other fields of science suitable to formulate and solve problems concerning sustainable building engineering (civil engineering,

environmental engineering and architecture),

- know the basics of geology, soil mechanics and foundation engineering of building facilities,

Skills:

- are able to obtain information from literature, databases and other properly selected information sources; can integrate the obtained information, interpret and evaluate it, as well as draw conclusions, formulate, discuss and justify opinions,

- are able to use advanced information and communication technologies (ICT) appropriate to perform typical engineering tasks,

- are able to plan and organise work; both individual and team; can cooperate with other people, are prepared to team work, also in interdisciplinary design teams (professionals of different sectors).

Social competences:

- are able to adapt to new and changing circumstances, can define priorities for performing tasks defined by themselves and other people, acting in the public interest and with regard to the purposes of sustainable development,

- take responsibility for the accuracy and reliability of working results and their interpretation,

- understand the need of team work, are responsible for the safety of their own work and team's work.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Checking of the systematic preparation for classes (short writing tests) and personal activity of students.

Final laboratory exam - oral examination of skill of rocks identification. Final exam of lecture knowledge

- combined test (multiple choice and supplementing of missing content) and a descriptive part (two descriptive issues)

Programme content

Basic issues in physical geology. Preliminary information about the Earth's evolution, construction of the inner Earth, endogenous processes (volcanism, plutonism, earthquakes and other geohazards connected with endogenous processes). Discussion of exogenous processes (physical and chemical weathering), erosive and accumulative activity of glaciers, basics of hydrogeology (origin and resources of water, water in the aeration and saturation zone, groundwater flows), water in the building bedrocks and filtration deformations. Erosion and accumulation caused by flowing water and standing water, aeolian processes. Surface mass movements, their types and causes, geological structures and areas able to the landslides in Poland. Geological and engineering classification of soils, structural bonds in mineral soils, sensitivity to changes in phase composition, review of soils with specific properties (thixotropic, suffusion, expansive, antropogenic, etc.). The geological structure of Wielkopolska and the genesis of soils occurring there. The rock-forming minerals, classification of igneous rocks and their correct macroscopic description. Classification, recognition and description of basic sedimentary and metamorphic rocks.

Course topics

Lectures: (order and topics modified to the needs of the audience):

1. Inner structure of the Earth, continental and oceanic crust

2. Plutonism i volcanism

3. Physical and chemical weathering

4. Mass movement

5. Glaciations and geological structure of Wielkopolska

6. Basics of hydrogeology

7. Review of soils with specific properties

Laboratory classes:

Rock-forming minerals, basic igneous, sedimentary and metamorphic rocks

Teaching methods

Lecture - multimedia presentations

Laboratory - multimedia presentations containing theoretical introduction and then practical classes in recognition of minerals and rocks

Bibliography

Basic:

Grotzinger J.P., Jordan T.H., Understanding Earth (2007)
Skinner B.J., Porter S.C., Park J., The Dynamic Earth (2000)
Plummer C. C., Physical geology (2008)
Benn D. I., Evans D.J.A., Glaciers & Glaciation (2010)

Additional:

Stanley S. M., Earth system history (1999-2009)
Van Andel T. H., New Views on an Old Planet (1994)

Breakdown of average student's workload

	Hours	ECTS
Total workload	50	2,00
Classes requiring direct contact with the teacher	30	1,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	20	1,00