



Subject card

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|---|--|---|--|------------|---|---------|-----|
| Subject name and code | , PG_00037564 | | | | | | |
| Field of study | Green Technologies | | | | | | |
| Date of commencement of studies | October 2021 | Academic year of realisation of subject | | | 2022/2023 | | |
| Education level | first-cycle studies | Subject group | | | Obligatory subject group in the field of study | | |
| Mode of study | Full-time studies | Mode of delivery | | | at the university | | |
| Year of study | 2 | Language of instruction | | | English | | |
| Semester of study | 4 | 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. Maria Przewłócka, doc. PG | | | | | |
| | Teachers | dr inż. Maria Przewłócka, doc. PG dr hab. inż. Tomasz Kolerski | | | | | |
| Lesson types and methods of instruction | Lesson type | Lecture | Tutorial | Laboratory | Project | Seminar | SUM |
| | Number of study hours | 15.0 | 0.0 | 0.0 | 0.0 | 15.0 | 30 |
| | 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 | 30 | 10.0 | | 35.0 | 75 | |
| Subject objectives | <p>geology part - the aim is to get acquainted students with inner and external geological processes, especially rocks and mineral forming processes. Acquiring skills in rocks and minerals identification and description and knowledge concerning conditions of groundwater occurrence.</p> <p>hydrology part - the aim is get acquainted students with the following issues: precipitation forming, rainfall measurement; surface runoff, rainfall excess, unit hydrograph, flood wave transformation, open channel flow; basic knowledge about hydraulic structures</p> | | | | | | |
| Learning outcomes | Course outcome | | Subject outcome | | Method of verification | | |
| | [K6_W03] has a basic knowledge of soil, air and water pollutants, design and supervision of environmentally friendly technologies and technologies which do not produce waste, knows technology of cleaning and neutralization of industrial waste and wastewater management, has a basic understanding of the theoretical basis of methods and types of apparatus used in chemical analysis of environmental pollutants | | Student understands and interprets geological processes influencing the Earth relief and the changes occurring on it's surface. Student understands and interprets conditions of groundwater occurrence and basic hydrological processes | | [SW1] Assessment of factual knowledge | | |
| | [K6_U05] can formulate and solve engineering tasks analytical methods, simulation as well as experimental, able to apply knowledge of basic physics and mathematics to analyze the results of experiments, is able to analyze and assess existing technical solutions | | Student identifies and describes basic minerals and rocks occurring in the Earth's crust. Student assesses groundwater vulnerability on the basis of hydrogeological data | | [SU1] Assessment of task fulfilment [SU2] Assessment of ability to analyse information | | |

| Subject contents | <p>the Earth's structure; geologic time, inner geological processes (volcanism, plutonism, metamorphism), external geological processes (weathering, erosion, mass wasting); plate tectonics theory, basic tectonic structures; the rock cycle;</p> <p>minerals: physical properties, recognition and description of : quartz, feldspars, micas, amphiboles, pyroxenes, olivines, magnetite, hematite, pyrite, galena, calcite, halite, gypsum, limonite</p> <p>rocks: forming, mineral composition, textures, classification; identification and description of rocks:</p> <p>- igneous: granite, rhyolite, pegmatite, diorite, andesite, gabbro, basalt</p> <p>- sedimentary: conglomerate, sandstone, silt, clay, boulder clay, compact limestone, fossiliferous limestone, flint</p> <p>- metamorphic: schists, gneiss, marble, quartzite, serpentinite, granulite</p> <p>Basic information on hydrogeology: groundwater table, gaining and losing streams, porosity, permeability, hydraulic coefficient, Darcy's law; hydrogeological cross-section</p> <p>precipitation forming,</p> <p>rainfall measurement;</p> <p>surface runoff, rainfall excess,</p> <p>unit hydrograph,</p> <p>flood wave transformation,</p> <p>open channel flow; hydraulic structures; tanks</p> | | | | | | | | | | | | | | |
|--|--|--|--|--------------------------|-------------------|-------------------------------|-----------------------|-------|-------|--------------|-------|-------|----------------|-------|-------|
| Prerequisites and co-requisites | basic knowledge on physics and chemistry | | | | | | | | | | | | | | |
| Assessment methods and criteria | <table border="1"> <thead> <tr> <th data-bbox="453 1301 794 1335">Subject passing criteria</th> <th data-bbox="799 1301 1141 1335">Passing threshold</th> <th data-bbox="1145 1301 1485 1335">Percentage of the final grade</th> </tr> </thead> <tbody> <tr> <td data-bbox="453 1341 794 1375">hydrogeology exercise</td> <td data-bbox="799 1341 1141 1375">60.0%</td> <td data-bbox="1145 1341 1485 1375">20.0%</td> </tr> <tr> <td data-bbox="453 1382 794 1415">geology test</td> <td data-bbox="799 1382 1141 1415">60.0%</td> <td data-bbox="1145 1382 1485 1415">30.0%</td> </tr> <tr> <td data-bbox="453 1422 794 1440">hydrology test</td> <td data-bbox="799 1422 1141 1440">60.0%</td> <td data-bbox="1145 1422 1485 1440">50.0%</td> </tr> </tbody> </table> | | | Subject passing criteria | Passing threshold | Percentage of the final grade | hydrogeology exercise | 60.0% | 20.0% | geology test | 60.0% | 30.0% | hydrology test | 60.0% | 50.0% |
| Subject passing criteria | Passing threshold | Percentage of the final grade | | | | | | | | | | | | | |
| hydrogeology exercise | 60.0% | 20.0% | | | | | | | | | | | | | |
| geology test | 60.0% | 30.0% | | | | | | | | | | | | | |
| hydrology test | 60.0% | 50.0% | | | | | | | | | | | | | |
| Recommended reading | Basic literature | <ul style="list-style-type: none"> • <i>Modern Physical Geology</i> - Thompson & Turk • <i>Understanding Earth</i> – Press, Siever, Grotzinger, Jordan • <i>Applied Hydrogeology</i> – C.W. Fetter • Chow V. T., Handbook of Applied Hydrology, 1964 Edition (or later) McGraw Hill, Inc. • Mays L. W., Water Resources Engineering, 2005 Edition (or later) John Wiley & Sons, Inc. • Viessman W., Lewis G. L. Introduction to Hydrology, Prentice Hall, 2003 (or later edition) • Henderson, F., M., Open Channel Flow, Prentice Hall, 1966 • Kolerski T., Praktyczne aspekty gospodarki wodnej w projektowaniu zbiorników retencyjnych, Wyd. PG, 2014 | | | | | | | | | | | | | |
| | Supplementary literature | <ul style="list-style-type: none"> • <i>The Encyclopedia of Applied Geology</i> - Ch. W. Finkl • <i>Environmental Geology Principles and Practise</i> – F. G. Bell • <i>Geological Dictionary</i> – R. Żyłka • <i>Guide to Rocks and minerals</i> – Simon & Schusters • <i>Rocks gems and minerals</i> – H. S. Zim and P.R. Shaffer • <i>Physical and Chemical Hydrogeology</i> – P.A. Domenico, F.W. Schwartz | | | | | | | | | | | | | |
| | eResources addresses | Adresy na platformie eNauczanie: | | | | | | | | | | | | | |
| Example issues/ example questions/ tasks being completed | <p>What is the mineral composition and the texture of granite.</p> <p>Charakterize divergent plate boundaries and name geological event occurring there.</p> | | | | | | | | | | | | | | |

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| Work placement | Not applicable |
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