GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

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| Subject name and code | Technology of Building Materials, PG_00018190 | | |
| Field of study | Chemistry in Construction Engineering | | |
| Date of commencement of studies | October 2021 | Academic year of realisation of subject | 2021/2022 |
| Education level | first-cycle studies | Subject group | Obligatory subject group in the field of study<br>Subject group related to scientific research in the field of study |
| Mode of study | Full-time studies | Mode of delivery | at the university |
| Year of study | 1 | Language of instruction | Polish |
| Semester of study | 2 | ECTS credits | 2.0 |
| Learning profile | general academic profile | Assessment form | assessment |
| Conducting unit | Department of Process Engineering and Chemical Technology -> Faculty of Chemistry | | |
| Name and surname of lecturer (lecturers) | Subject supervisor | dr hab. inż. Anna Zielińska-Jurek | |
| | Teachers | dr hab. inż. Anna Zielińska-Jurek | |

**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

Adresy na platformie eNauczanie:
Technologie Materiałów Budowlanych - Moodle ID: 23452
https://enauczanie.pg.edu.pl/moodle/course/view.php?id=23452

**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 | 2.0 | 18.0 | 50 |

**Subject objectives**

Knowledge in the field of production technology, processing, recovery of basic building materials (glass, ceramics, concrete, adhesives).

**Learning outcomes**

| Course outcome | Subject outcome | Method of verification |
|---|---|---|
| K6_W05 | The student has knowledge of the characteristics, classification and production of building materials, including: stone and ceramic materials, minerals, metallic materials, polymer binders, composites, glass. The student has knowledge of the applications and global development trends of the above-mentioned materials. | [SW2] Assessment of knowledge contained in presentation<br>[SW1] Assessment of factual knowledge<br>[SW3] Assessment of knowledge contained in written work and projects |
| K6_W11 | The student has elementary knowledge of the basic concepts and problems of QA, work organization and integrated management. The student has knowledge in the field of quality control of construction materials and products and basic legal acts in the field of management of chemical substances, including construction chemicals | [SW2] Assessment of knowledge contained in presentation<br>[SW1] Assessment of factual knowledge<br>[SW3] Assessment of knowledge contained in written work and projects |
| K6_U06 | Knowledge of the characteristics of building materials, grain size analysis etc | [SU4] Assessment of ability to use methods and tools |

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| Subject contents | Lecture: Classification of building materials. Stone materials (rocks, sands, gravel). Ceramic materials. Minerals binders. Masonry products. Regular concrete, high-performance concrete, self-consolidation concrete. Vacuum concretes. Wood and wood-like materials. Glass. Plastics. Paint supplies. Bitumen binders and products. Metals and metal constructions. Insulating materials and thermal insulating materials. Seminar: Basic characteristics of building materials and products. Hardness measurement, Mohs scale, Vickers scale and Rockwell scale. Mineral binders. The mechanism of hardening of binders for lime, gypsum and concrete binders (hydrolysis, hydration and carbonization). Preparation of self-cleaning concretes with titanium dioxide. Computing in building materials chemistry. Construction aggregates. Aggregate pollytag: manufacturing process. Crushing and grinding of building materials. Properties of materials based on sieve analysis. Building glass. Masonry products. Manufacturing and characterization of concretes (concrete classifications, content and concrete mixing methods). |
| Prerequisites and co-requisites | Basic knowledge of inorganic chemistry and organic chemistry |
| Assessment methods and criteria | |

| Subject passing criteria | Passing threshold | Percentage of the final grade |
|---|---|---|
| Contribution to activities | 50.0% | 45.0% |
| Midterm colloquium | 50.0% | 55.0% |

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| Recommended reading | Basic literature | 1. Stefańczyk B (red), Budownictwo ogólne tom 1 Materiały i wyroby budowlane, Arkady, Warszawa, 2009. |
| | Supplementary literature | (in polish) 2. Osiecka E., Materiały budowlane. Spoiwa mineralne i kruszywa, Oficyna Wydawnicza Politechniki Warszawskiej, Warszawa 2005. 3. Osiecka E., Materiały budowlane. Kamień. Cerami. Szkło, Oficyna Wydawnicza Politechniki Warszawskiej, Warszawa 2010. 4. Osiecka E., Materiały budowlane. Tworzywa sztuczne, Oficyna Wydawnicza Politechniki Warszawskiej, Warszawa 2005. |
| | eResources addresses | Technologie Materiałów Budowlanych - Moodle ID: 23452<br>https://enauczanie.pg.edu.pl/moodle/course/view.php?id=23452 |
| Example issues/ example questions/ tasks being completed | Classification of ceramic<br><br>Binding and hardening of gypsum binders, lime, cement<br><br>Discuss the design of concrete by three equations,<br><br>Discuss the corrosion of reinforcing steel in concrete<br><br>How does acid rain can affect the concrete? | |
| Work placement | Not applicable | |