GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

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|---|---|---|---|
| Subject name and code | Building physics, PG_00061232 | | |
| Field of study | Fizyka budowli | | |
| Date of commencement of studies | October 2024 | Academic year of realisation of subject | 2026/2027 |
| 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 | 3 | Language of instruction | Polish |
| Semester of study | 5 | ECTS credits | 2.0 |
| Learning profile | general academic profile | Assessment form | assessment |
| Conducting unit | Department of Safety Architecture -> Faculty of Architecture -> Wydziały Politechniki Gdańskiej | | |
| Name and surname of lecturer (lecturers) | Subject supervisor | dr inż. arch. Joanna Kabrońska | |
| | Teachers | | |

**Lesson types**

| Lesson type | Lecture | Tutorial | Laboratory | Project | Seminar | SUM |
|---|---|---|---|---|---|---|
| Number of study hours | 5.0 | 25.0 | 0.0 | 0.0 | 0.0 | 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 | 4.0 | 16.0 | 50 |

**Subject objectives**

The student recognizes the basic physical processes in buildings and the relationship between the building and the environment.

**Learning outcomes**

| Course outcome | Subject outcome | Method of verification |
|---|---|---|
| [K6_U04] is able to use analytical methods to formulate and solve project tasks | is able to use analytical methods to formulate and solve design tasks in the field of building physics | [SU1] Ocena realizacji zadania<br>[SU2] Ocena umiejętności analizy informacji |
| [K6_W01] knows and understands construction problems, building and engineering issues related to building design; principles, solutions, constructions and building materials used in simple engineering tasks in the field of architectural and urban design | knows and understands the issues of building physics covering key issues in architectural design, in particular physical phenomena occurring in buildings and between the building and the environment, including issues of heat and moisture, and knows the principles of design that will reduce energy consumption of the building and enable a proper microclimate in the building. | [SW1] Ocena wiedzy faktograficznej |

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| Subject contents | Lectures:<br><br>1. Architecture and climate. Energy quality. Energy: introduction<br><br>2. Physical phenomena in buildings: basics of heat transfer theory<br><br>3. Inhomogeneous layers and thermal bridges<br><br>4. Humidity and moisture protection<br><br>5. Energy performance. Requirements. Certification<br><br>Tutorials:<br><br>1. Thermal and moisture properties of building elements<br><br>2. Evaluation of building elements in terms of energy efficiency |
| Prerequisites and co-requisites | |

**Assessment methods and criteria**

| Subject passing criteria | Passing threshold | Percentage of the final grade |
|---|---|---|
| Calculation task | 51.0% | 70.0% |
| Test | 51.0% | 30.0% |

**Recommended reading**

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|---|---|
| Basic literature | Alsabry A., Szymański K.: Fizyka cieplna budowli dla architektów, 2025<br><br>Kaliszuk-Wietecka A.: Budownictwo zrównoważone. Wybrane zagadnienia z fizyki budowli, 2017 |
| Supplementary literature | Trogal K., Bauman I., Lawrence R., Petrescu D. (ed.): Architecture and Resilience. Interdisciplinary Dialogues, 2019<br><br>La Roche P.: Carbon-Neutral Architectural Design, 2017<br><br>Naboni E., Havinga L. (ed.): Regenerative Design in Digital Practice. A Handbook for the Built Environment, 2019<br><br>Eames M. (ed.): Retrofitting Cities for Tomorrows World, 2018<br><br>Lehmann S.: Urban Regeneration. A Manifesto for transforming UK Cities in the Age of Climate Change, 2019<br><br>Delgado Ramos G. C.: Climate Change-Sensitive Cities: Building Capacitites for Urban Resilience, Sustainability & Equity, 2017 |
| eResources addresses | |

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|---|---|
| Example issues/ example questions/ tasks being completed | Calculate the hygrothermal properties of building partitions (various types of envelopes) and verify their compliance with current requirements.<br><br>Evaluate the impact of thermal bridges on the partition |
| Practical activites within the subject | Not applicable |

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