

BUILDING PHYSICS II

Subject code: **13.2-WILŚ- BUD- FIZB- KC12**

Subject type: Obligatory

Language of instruction: English

Responsible for the subject: Person currently conducting lectures

Providing education: Department of General Construction

Type of class	Number of classes per semester	Number of classes per week	Semester	Type of credit	ECTS points
Full time studies					2
Lecture	15	1	III	credit with a grade	
Project	15	1		credit with a grade	
Part time studies					
Lecture	10	1	III	credit with a grade	
Project	10	1		credit with a grade	

SUBJECT OBJECTIVE:

To teach students to describe and analyse the processes that contribute to the comfort of the use of buildings, including the microclimate and protection against external (non-mechanical) impacts.

INITIAL REQUIREMENTS:

Building physics I.

SUBJECT SCOPE:

Lecture

Thermo-humidity problems of building partitions such as: moisture level in building partitions - forms of moisture in building materials, mechanisms and models of moisture movement in building materials, drying partitions from initial moisture. Fundamentals of physics of building materials such as: internal structure of building materials (adsorption of water vapour, condensation of water vapour and water freezing), phase changes of moisture in building materials (material humidity, moisture transfer mechanisms, energy bases for heat and moisture transfer and moisture flow equations), transfer of moisture in porous materials.

Project:

Design of partitions and building elements in terms of their thermal and moisture condition with the use of computer software.

Educational methods:

Lecture - conventional lecture

Project - individual and team work on a project

EDUCATION RESULTS:

Results after completion of the course	Symbol	Verification method	Type of class
Knowledge			
The student has a basic knowledge of building physics, knows methods and techniques for calculating mass and heat exchange in building elements and partitions under the influence of atmospheric factors such as: temperature, relative humidity, pressure and rainfall. The student knowledge of the basic mechanisms of moisture movement and moisture in capillary-porous materials. The student has basic knowledge of the standards computer software related to this	K_W03 K_W05	Test with points	L
Abilities			
The student can design partitions and building elements in terms of their hydrothermal condition taking into account atmospheric factors. The student can use standards and computer software to analyse the results of calculations	K_U07 K_U08	Projects	P
Social competences			
The student can think and act in an entrepreneurial way, The student can search for information needed to solve problems in literature, standards and on the Internet	K_K02 K_K04	conversation during lectures initiated by the teacher; checking competences during the introduction to classes	L , P

REQUIREMENTS TO OBTAIN A CREDIT:

- Lecture - the condition for a credit is a positive grade for the test.
Project - the condition for a credit is a positive grade for the project.
The final grade for the subject: $G=(L+P)/2$

STUDENT WORK:

- Lecture - 15 h.
Project - 15 h.

BASIC LITERATURE:

1. Klemm, P. i inni: *Budownictwo ogólne, tom 2: Fizyka budowli*, Arkady, Warsaw 2005
2. Płoński, W., Pogorzelski, J. A.: *Fizyka budowli*, Arkady, Warsaw 1979
3. Pogorzelski, J. A.: *Fizyka cieplna budowli*, PWN, Warsaw 1976

COMPLEMENTARY LITERATURE:

1. Wilmański, K.: *Fizyka budowli – notatki do wykładów*, compilation at www.mech-wilmanski.de
2. Miesięcznik: „Izolacja”
3. Miesięcznik: „Materiały budowlane”
4. Miesięcznik: „Energia i budynek”

SYLLABUS PREPARED BY:

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