



Course title: BUILDING PHYSICS IN LOW ENERGY BUILDINGS

ECTS credit allocation (and other scores): 2.5

Semester: autumn

Level of study: ISCED-7 - second-cycle programmes (EQF-7)

Branch of science: Engineering and technology

Language: English

Number of hours per semester: 30 classes, 15 lectures

Course coordinator/ Department and e-mail: dr inż. Piotr Kosiński / Institute of Building Engineering
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Type of classes: classes

Substantive content

CLASSES: Heat transfer through transparent elements. Simulations of coupled heat and mass transport in building elements: thermal bridges, insulation, air filtration, moisture distribution in porous materials.

LECTURES: Thermal characteristics of transparent elements. Air filtration through building envelope. Energy balance equations. Transparent insulations. Complex numerical analysis of coupled heat and mass transport in building elements. Low emissivity materials.

Learning purpose: Acquiring advanced knowledge on heat and mass transport in building partitions. Ability to conduct thermal and moisture simulations of building multilayers elements.

On completion of the study programme the graduate will gain:

Knowledge: The student knows advanced methods of building physics concerning heat and moisture migration in building elements.

Skills: The student can, in accordance with scientific principles, use the scientific workshop to formulate and carry out preliminary research works leading to the solution of engineering, technological and organizational problems occurring in energy-saving construction. The student can prepare studies preparing for undertaking scientific work.

Social Competencies: The student independently completes and expands knowledge in the field of modern processes and technologies in construction. The student is aware of the need for sustainable development in construction. The student is aware of the need to raise professional and personal competences. The student understands the need to provide the public with knowledge about construction.

Basic literature:

Carl-Eric Hagentoft. Introduction to Building Physics. ISBN 9144018967. Lund, Sweden : Studentlitteratur, 2001.

Supplementary literature:

Journal of Building Physics. ISSN: 1744-2591. <https://journals.sagepub.com/home/jen>

Energy and Buildings. ISSN: 0378-7788. <https://www.journals.elsevier.com/energy-and-buildings>

[Carl-Eric Hagentoft](#) Youtube channel

The allocated number of ECTS points consists of:

Contact hours with an academic teacher: 47



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Student's independent work: 12.5