



Course title: BUILDING PHYSICS

ECTS credit allocation (and other scores): 2.5

Semester: autumn

Level of study: ISCED-6 - first-cycle programmes (EQF-6)

Branch of science: Engineering and technology

Language: English

Number of hours per semester: 15

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: Calculation of thermal properties of materials and building elements. Calculating thermal transmittance of building elements. Air cavity layers. Estimating the risk of mold growth and internal condensation in the elements and building partitions. Noise measurements in rooms. Light measurements in rooms. Presentation of computer programs for thermal and humidity calculations in building physics. Air tightness of the building envelope.

LECTURES: Parameters of the outdoor climate and the microclimate of the rooms. Physical properties of building materials and building partitions. Rules for designing building partitions. Heat transfer through building partitions. Thermal protection of buildings. Thermomodernization of buildings. Moisture problems in building partitions. Building acoustics. Room lighting. Basic errors in the construction, implementation and operation of buildings from the point of view of building physics. The basics of presenting the results of building physics analyzes and calculations to business partners.

Learning purpose: Presentation of the scope of building physics. Transfer of basic knowledge in the field of thermodynamics, hygrometry, building acoustics and room lighting.

On completion of the study programme the graduate will gain:

Knowledge: The student knows the basics of building physics concerning the migration of heat and moisture in building elements. The student knows the basics of building acoustics and room lighting.

Skills: The student is able to correctly choose tools (analytical or numerical) to solve problems of physical phenomena in buildings. The student can use selected computer programs supporting the correct design of building partitions.

Social Competencies: The student independently completes and expands knowledge in the field of modern processes and technologies. Is aware of the need to raise professional and personal competences. He is responsible for the reliability of the results of his work and their interpretation.

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: 32

Student's independent work: 30.5