COURSE DESCRIPTION CARD - SYLLABUS

Course name
Building Physics - Thermal Transmittance [S1Arch1E>FBT]

Course

Field of study
Architecture

Year/Semester
2/4

Area of study (specialization)
–

Profile of study
general academic

Level of study
first-cycle

Course offered in
English

Form of study
full-time

Requirements
compulsory

Number of hours

Lecture
30

Laboratory classes
0

Other (e.g. online)
0

Tutorials
0

Projects/seminars
0

Number of credit points

1,00

Coordinators

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Lecturers

Prerequisites

Knowledge: • the student has a structured, founded general knowledge covering key issues in the field of building physics, • the student knows the basic methods, techniques and materials used to solve simple engineering tasks in the field of building physics • the student has a basic knowledge of development trends in the field of energy-saving and passive construction 2 Skills: the student is able to obtain information from literature, databases and other, properly selected sources, also in English, is able to integrate information, interpret it, as well as draw conclusions and formulate and justify opinions, the student is able to communicate using various techniques in the professional and other environments the student is able to use information and communication techniques appropriate to the implementation of tasks typical for engineering activities 3 Social competences: the student understands the need for lifelong learning, is able to inspire and organize the learning process of other people, the student is aware of the importance and understands the non-technical aspects and effects of engineering activities, including its impact on the environment and the related responsibility for decisions made, the student is able to interact and work in a group, assuming various roles in it

Course objective

- acquiring the latest knowledge in the field of heating, ventilation and air conditioning in residential and industrial buildings, - learning about the method of calculating the thermal load in buildings and other methods of thermal- flow and hydraulic calculations in the designed installations, - learning the rules for selecting devices to the sizes calculated in the designed heating, ventilation and air conditioning systems, - gaining skills in the field of creativity in evaluation in the design of heating, ventilation and air conditioning installations

Course-related learning outcomes

Knowledge:
B.W4. mathematics, space geometry, statics, material strength, shaping, construction and dimensioning of structures, to the extent necessary to formulate and solve tasks in the area of architectural and urban design;
B.W7. ways of communicating the idea of architectural, urban and planning projects and their development;
B.W9. principles of occupational health and safety.

Skills:
B.U3. use properly selected computer simulations, analyzes and information technologies supporting architectural and urban design;
B.U4. develop solutions for individual building systems and elements in terms of technology, construction and materials;
B.U5. make a preliminary economic analysis of planned engineering activities;
B.U6. properly apply standards and legal regulations in the field of architectural and urban design.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

An exam in the form of a test on the eMoodle platform is conducted as a way to check the learning outcomes from the lectures.
Assessment scale: 2,0; 3.0; 3.5; 4.0; 4.5; 5.0

Programme content

As part of the education program, the student listens to lectures, from which he obtains the necessary information on the physics of buildings in terms of the impact of individual architectural solutions on the energy consumption of the building.
The student also learns about technical and legal regulations and requirements for ventilation, heating, cooling and fire ventilation installations. The types of elements and devices used in the mentioned installations as well as basic diagrams and materials are discussed.

Course topics

none

Teaching methods

Lecture with a multimedia presentation and access to materials in the form of slides.

Bibliography

Basic
1. Koczyk H. , i inni. Ogrzewnictwo praktyczne, projektowanie, montaż, certyfikacja energetyczna, eksploatacja. Wydanie II , Wyd. Systherm Serwis Poznań 2009.
2. Krygier K. , i inni. Ogrzewnictwo. Wentylacja. Klimatyzacja. Wyd. WSiP. Warszawa 1997.
3. Gaziński B. Technika Klimatyzacyjna dla praktyków, komfort cieplny, zasady obliczeń i urządzenia. Wyd. Systherm Serwis Poznań 2005.
4. Mùrmann H. Wentylacja mieszkań. Wentylacja regulowana z odzyskiem ciepła. Wyd. Instalator Polski Warszawa 2001.

5. E-skrypt dla przedmiotu „Fizyka budowli – termika” (w przygotowaniu).
Legal acts:
1.PN –EN ISO 6946 Building components and building elements. Thermal resistance and heat transfer coefficient. Calculation method.
2. PN –EN 12831 Heating installations in buildings. Design heat load calculation methods.
3. PN –EN ISO 13790 Thermal performance of buildings. Calculation of thermal energy for heating 4. PN-78 / B-03421. Ventilation and air conditioning. Calculation parameters of indoor air in rooms intended for permanent human habitation
5. PN-B-03430: 1983. Ventilation in residential buildings of collective housing and public utility buildings. Requirements.
Additional
1. Nantka M. Ogrzewnictwo i ciepłownictwo. Tom I i II. Wydawnictwo Politechniki Śląskiej Gliwice 2006.
2. Recknagel, Sprenger i inni. Ogrzewanie i klimatyzacja. Poradnik. Wyd. EWFE Gdańsk 2008.
3. Gutkowski K. Chłodnictwo i klimatyzacja. Wyd. N–T Warszawa 2003

Breakdown of average student's workload

	Hours	ECTS
Total workload	37	1,00
Classes requiring direct contact with the teacher	32	1,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	0	0,00