COURSE DESCRIPTION CARD - SYLLABUS

Course name
Construction physics [N1Bud1>FOB]

Course

Field of study
Civil Engineering

Year/Semester
2/3

Area of study (specialization)
–

Profile of study
general academic

Level of study
first-cycle

Course offered in
Polish

Form of study
part-time

Requirements
compulsory

Number of hours

Lecture
20

Laboratory classes
0

Other (e.g. online)
0

Tutorials
10

Projects/seminars
0

Number of credit points

3,00

Coordinators

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Lecturers

Prerequisites

Basic knowledge of building materials, physics and basic methods of mathematical analysis Students can: use-programs Excel (basic features) identify and describe building materials and their basic physical characteristics, can provide a layer of individual partitions, understands the basic laws governing the flow of heat Awareness of the need to constantly update and supplement knowledge construction and engineering skills. Understand the need for lifelong learning and knows how to interact and work in a group, taking the different roles.

Course objective

Extending and deepening the knowledge of thermodynamics and hygrometry, to the course is to familiarize students with the methods of calculation of thermal and moisture barriers, and building research methods and termorenowacyjnymi, damp-proofing, drying buildings and restore the insulation.

Course-related learning outcomes

Knowledge:
1. She/He can design a barrier (wall, roof etc) and calculate heat transfer coefficient - - [-P6S_UW (O/I) P6S_UK (O)]

2. She/He can choose the method of thermal renovation and waterproofing - - [-P6S_UW (O/I) P6S_UK (O)]
3. She/He can describe the phenomenon and analyze the causes of problems in the building mycological - - [-P6S_UW (O/I) P6S_UK (O)]

Skills:
. She/He knows and understand the work of a thermal barrier, knows the method of calculation - - [-P6S_WG (I)]
2. She/He knows the research methods restoration, protection against moisture, drying buildings and restore the insulation. - - [-P6S_WG (I)]
3. She/He knows matrieły and methods termorenowacyjne partitions - [-P6S_WG (I)]
4. She/He knows the basic principles of heat transfer, ventilation of the building, - - [P6S_WG (I)]

Social competences:
1.She/He is acquires the ability to work in a team, - - [P6S_KK (O) P6S_KO (O) P6S_KR (O]
2. She/He is able to set priorities for the implementation of specific actions, - - [P6S_KO (O) P6S_KR (O)]

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Within the subject, classes are conducted as: lectures and exercises
as a form of measurement / evaluation of the student's work, the following are carried out:
Lectures:
* final tests
Rating scale specified% from:
90 very good (A)
85 good plus (B)
75 good (C)
65 sufficient plus (D)
55 sufficient (E)
below 54 insufficient (F)
In doubtful cases, the credit is extended to the oral part.
Auditorium exercises:
final test in the last week of classes;
Continuous assessment of calculations of individual building partitions during each class

Programme content

Extending and deepening the knowledge of thermodynamics and hygrometry, the aim of the course is to familiarise students with the methods of thermal and moisture calculations of the building envelope, as well as research and thermo-renovation methods, damp-proofing, building drying and insulation restoration.

Lectures: Basics of heat transfer. Thermo-humidity properties of materials
construction. Thermal calculations of partitions, stationary and one-dimensional problems. Thermal calculations of partitions, multidimensional problems. Thermal bridges. Problems of non-stationary heat flow, thermal stability of partitions. Causes and types of moisture in the building, diffusion and condensation of water vapor. Principles of designing and manufacturing partitions that meet the standard requirements for thermal and humidity protection of the building.
Exercises:
calculation of heat transfer coefficients for different partitions. Determining the co-frsi for the selected partition

Course topics

Basics of heat transfer. Thermal and humidity properties of building materials. Thermal calculations of partitions - stationary, one-dimensional problems. Thermal calculations of partitions - multidimensional issues. Thermal bridges. Issues of unsteady heat flow, thermal stability of partitions. Causes and types of moisture in buildings, diffusion and condensation of water vapor. Principles of designing and constructing partitions that meet standard requirements in the field of thermal and humidity protection of the building. Building ventilation - guidelines

Exercises:
calculation of heat transfer coefficients for various partitions. Determining the frsi coefficient for the selected partition

Teaching methods

Lecture / problem lecture / lectures with multimedia presentation
Exercises / exercises involving the use of professional literature, standard, Act.

Bibliography

Basic:
1. Praca zbiorowa pod kier. P .Klemma: Budownictwo ogólne t.2 wyd. Arkady 2005
2. Płoński, Pogorzelski : Fizyka budowli Arkady 1976
3. aktualne normy(PN-EN ISO 6946(2008,2017),PN-EN ISO 13370, PN-EN ISO 10211-1:1998,PN-EN ISO 13788:2017)
4. Rozporządzenie Ministra Infrastruktury z 12 kwietnia 2002 w sprawie warunków technicznych, jakim powinny odpowiadać budynki i ich usytuowanie. (z późniejszymi zmianami)
5. Prawo Budowlne (ost. zm. 2024)

Additional:
1. B.Ksit,B.Monczyński - Zabezpieczenie elementów budynku znajdujących się w gruncie. Izolacje przeciwwilgociowe i przeciwwodne.Verlag Daschofer sp.z o.o.2011
2. B.Ksit,B.Monczyński - Izolacje przeciwwilgociowe i przeciwwodne dachów płaskich i tarasów. Verlag Daschofer sp.z o.o.2012
3. R.Wójcik - Docieplenie budynków od wewnatrz. medium Warszawa 2017
4. J.Jasiczak, M. Kuinski, M. Siewczyńska M.Gaczek- Obliczanie izolacyjności termicznej i nośność murowanych ścian zewnętrznych. Wyd. Politechniki Poznańskiej,
6. Nowoczesne wyposażenie domu jednorodzinnego, praca zbiorowa pod red. prof. dr hab. inż. Halina Koczyk, PWRiL Poznań

Breakdown of average student's workload

	Hours	ECTS
Total workload	80	3,00
Classes requiring direct contact with the teacher	30	1,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	50	2,00