COURSE DESCRIPTION CARD - SYLLABUS

Course name
Construction services [S1Bud1>TWOB]

Course

Field of study
Civil Engineering

Year/Semester
3/5

Area of study (specialization)
–

Profile of study
general academic

Level of study
first-cycle

Course offered in
Polish

Form of study
full-time

Requirements
compulsory

Number of hours

Lecture
30

Laboratory classes
15

Other
0

Tutorials
0

Projects/seminars
15

Number of credit points

4,00

Coordinators

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Lecturers

Prerequisites

The student should have basic knowledge of: • Physics (heat, work, energy, heat transfer, air and fluid flow), • Mathematics (algebraic calculations, linear equations), • Fluid mechanics and fundamentals of electricity, • General construction (building materials, basic construction technologies).

Course objective

The aim of the course is to familiarize students with the principles of design, construction, and operation of technical installations in buildings, including heating, water and sewage, gas, electrical, ventilation, and air conditioning systems, as well as the use of renewable energy sources.

Course-related learning outcomes

none

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

• Written exam/test – assessment of knowledge of theory and standards.
• Individual or group project – assessment of practical design skills.
• Laboratory reports – assessment of practical skills and interpretation of measurement results.
• Class participation – assessment of student engagement.

Programme content

X
X
X
Electrical installations – legal status
Basic information on electrical installations and electrical equipment used in buildings.

Course topics

• Lectures: Discussion of theory and principles of building installation design.
• Design exercises: Analysis of the compliance of public building projects with technical requirements; design of water supply, electrical, heating, and ventilation systems.
• Laboratories: Pipe joining technologies, thermal and humidity comfort, thermographic measurements, heat pump testing, photovoltaic system performance testing, determination of heat transfer coefficient.

Teaching methods

• Problem-based lectures and multimedia presentations.
• Calculations and design exercises.
• Practical and diagnostic laboratories.
• Discussions and case studies.
• Individual or group project.

Bibliography

• Krygier K., Klinke T., Sewerynik J. — *Heating. Ventilation. Air Conditioning*
o Publisher: WSiP (2007), ISBN-13: 978-83-02-07898-9

• Markiewicz H. — *Electrical Installations*
o Publisher: PWN / WNT, ISBN 978-83-01-20018-3

• Rubik M., Nowicki J., Chmielowski A., Pykacz S., Furtak L. — *Central Heating, Ventilation, Hot and Cold Water, and Gas Installations in Single-Family Buildings*
o Publisher: Instal (2000), ISBN: 83-909-273-8-1

• Standards and documents:
o ISO 7730 — *Ergonomics of the thermal environment — Analytical determination and interpretation of thermal comfort (PMV/PPD)*
o EN 12831 — *Heating systems in buildings — Method for calculation of the design heat load*
o EN 16798 — standards concerning indoor environmental conditions and ventilation requirements

Breakdown of average student's workload

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