

Tadeusz Kosciuszko Cracow University of Technology

Course Card

Faculty of Civil Engineering

Field of study: Civil Engineering

Study profile: general academic

Study form: full-time

Field of study code: BUD

Study cycle: 1st

Specialty: no specialty

1 COURSE INFORMATION

Course name	Instalacje budowlane w obiektach kubaturowych
Course name in English	Building Installations in Cubature Objects
Course code	WIL BUD oIS D53 24/25
Course category	Przedmioty profilowe
No. of ECTS points	3.00
Semester	6

2 CLASS TYPE, NUMBER OF HOURS ACCORDING TO THE STUDY PLAN

Semester	Lecture	Class exercise	Laboratory	Computer lab	Design exercise	Seminar
6	30	0	0	0	15	0

3 COURSE OBJECTIVES

Objective 1 Presenting to students basic knowledge of indoor installations in cubature buildings

Objective 2 Presenting to students alternative energy sources

Objective 3 Presenting to students the rules of making the documentation of indoor installations in cubature buildings

4 PREREQUISITES IN TERMS OF KNOWLEDGE, SKILLS AND OTHER COMPETENCES

1 General construction

2 Sensitive and latent heat balance in buildings

5 LEARNING OUTCOMES

LO1 Knowledge Student describes and explains the principles and characteristics of indoor installations in cubature buildings

LO2 Skills Student describes and explains the rules of designing indoor installations in cubature buildings

LO3 Knowledge Student can explain and make the documentation of indoor installations in cubature buildings

LO4 Knowledge Student can coordinate the different installations inside the building

6 COURSE CONTENT

Design exercise		
No.	Subject matter of the course Detailed description of thematic blocks	No. of class hours
P1	Water plumbing system design in a cubature building analysis of the existing plumbing system, plumbing dimensioning	5
P2	Water distribution system design for small agglomeration	5
P3	Ventilation and air-conditioning systems. Reading and correcting the documentation	5

Lecture		
No.	Subject matter of the course Detailed description of thematic blocks	No. of class hours
L1	Source of water in the household, water service lines, water plumbing in single family, multistory and cubature buildings: pipe materials, valves, meters, plumbing fixtures and appliances, pressure zones, hydrophore units, hot water plumbing systems	4
L2	Wastewater disposal solutions in the household, sewer line, gravity drain system in single family and multistory buildings: pipe materials, plumbing fixture and appliance connections, drain equipment's, drain system venting	4
L3	Water supply systems: water intakes, water demand, water distribution systems, piping materials, pipeline construction, reliability and maintenance, pumping stations, water tanks, water treatment plants.	4
L4	Sewerage systems: sanitary sewers and storm water drainage systems, pipeline construction, repair and maintenance, sewage pumping stations, storm water detention tanks, vacuum and pressure systems, wastewater treatment plants.	4

Lecture		
No.	Subject matter of the course Detailed description of thematic blocks	No. of class hours
L5	The structures of LV and MV power supply systems (IT, TN-C, TN-S), example of buildings (public and residential) wiring diagrams and description of basic symbols. Connecting of electrical equipment into electric installation. Determination of wires colours Layout of electrical installation inside the walls and construction divisions. Layout of electrical installation over the surface of the walls	2
L6	The calculation of circuit loads and currents for LV circuits. Apparent power, active and reactive powers calculation of the currents for various types of loads Installed and required power for residential buildings. Basic protection system and the selection of proper protection devices (selection of fuses, safety switches, thermal protection devices) and the requirements they have to satisfy. Documents: Required by standards records from the tests and measurements Basic of the design and installation of lighting and voltage surge protection equipment and grounding circuitry	2
L7	Air properties, standards, natural ventilation characteristics, advantages and disadvantages	4
L8	Mechanical ventilation, hybrid ventilation, Air conditioning systems, methods of energy saving in ventilation and air conditioning systems	4
L9	Renewable energy sources, alternative systems (solar, heat pumps)	2

7 TEACHING TOOLS

N1 Lecture

N2 Design exercise

8 Student workload

Activity form	Number of hours of activity
Hours realized in contact with the teacher	
Hours resulting from the study plan	45
Consultation hours	0
Exams and tests during session	2
Hours of autonomous student work	
Preparing for classes, studying literature	13
Developing results	0
Preparing of reports, projects presentations, discussion	30
Total number of hours devoted to the subject	90
Total number of ECTS points	3.00

9 Methods of grading

Partial grades

F1 positive grade of returned project

Summary grade

P1 Test

Conditions for passing the course

L1 positive grade from the test and returned project
