

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	Problemy bezpieczeństwa pożarowego w inżynierii lądowej
Course name in English	Fire Safety Measures in Civil Engineering
Course code	WIL BUD oIS C44 24/25
Course category	Basic
No. of ECTS points	1.00
Semester	6

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

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

3 COURSE OBJECTIVES

Objective 1 Presentation of building law requirements related to the problem how to secure the acceptable safety level in various building types in case of internal fire ignition and its development.

Objective 2 Presentation of succeeding phases of fire development in building compartment, their characterisation and description of basic parameters used for mathematical fire modelling.

Objective 3 Presentation of possible ways of structural member fire protection. A detailed survey of active and passive fire protection measures currently used in practice, according to the building type as well as the way of its exploitation.

4 PREREQUISITES IN TERMS OF KNOWLEDGE, SKILLS AND OTHER COMPETENCES

1 No preliminary requirements

5 LEARNING OUTCOMES

LO1 Knowledge Understanding of the nature of fire phenomenon potentially occurred in building compartment, particularly of basic rules determining its intensity and development.

LO2 Knowledge of the possible ways of structural member fire protection in case of fire ignition and its development in building compartment.

LO3 Knowledge of the building law requirements related to the necessary active and passive fire protection measures.

LO4 Skills Competence in the selection of active and passive fire protection measures according to the type of the structural element as well as to the level of potential risk.

LO5 Skills Competence in the reliable evaluation of the usefulness, effectivity and efficiency with respect to the chosen measure of fire protection, in context of the ability to select an alternative measure, more economic or better justified for application.

LO6 Knowledge Competence in the assessment of fire throw type as well as of the risk level in context of the analysis of all potentially possible fire scenarios.

LO7 Knowledge Promotion of sustainable building technologies, with the application of modern and economically justified solutions, especially those related to the problems of safety of people as well as of the cost of the assurance of the accurate safety level, with particular respect to the analysis of the potential fire throw.

6 COURSE CONTENT

Lecture		
No.	Subject matter of the course Detailed description of thematic blocks	No. of class hours
L1	Nature of fire phenomenon. Fire in fire compartment. Basic parameters describing its intensity and development.	2
L2	Modelling of fire development. Numerical models. Analytical models.	1
L3	Building law requirements related to the acceptable level of fire protection.	1
L4	Passive fire protection measures applied for various building elements. Ways of the selection of optimal insulation material as well as its necessary parameters.	1
L5	Active fire protection measures possible to use in buildings.	1
L6	Fire resistance limit state - specification and interpretation of limit condition, practical ways of its verification.	1

Lecture		
No.	Subject matter of the course Detailed description of thematic blocks	No. of class hours
L7	Technique of the temperature evaluation of structural member exposed to fire, thermally insulated as well as unprotected against the fire exposure.	1
L8	Properties of constructional steel subjected to fire.	1
L9	Structural wood exposed to fire. Behavior of timber elements under fire conditions.	1
L10	Reinforced concrete members exposed to fire. Properties of concrete under fire temperature. Spalling.	3
L11	Fire tests of building materials. Basic classifications of building materials with respect to their reaction for fire exposure.	1
L12	Test	1

7 TEACHING TOOLS

N1 Lectures

N2 Discussion

N3 Multimedia presentation

8 Student workload

Activity form	Number of hours of activity
Hours realized in contact with the teacher	
Hours resulting from the study plan	15
Consultation hours	0
Exams and tests during session	0
Hours of autonomous student work	
Preparing for classes, studying literature	15
Developing results	0
Preparing of reports, projects presentations, discussion	0
Total number of hours devoted to the subject	30
Total number of ECTS points	1.00

9 Methods of grading

Partial grades

F1 Test

Summary grade

P1 Test

Assessment of activity without teacher participation

B1 Test
