1. Course number and name

RB-S1-19-S4F-6C; **Fire Protection in Construction**

2. Credits and contact hours*

1 ECTS, lectures: 10 hours**, seminars 10 hours**

3. Instructor's or course coordinator's name

Jerzy Bochen PhD, DSc/University Professor

4. Text book, title, author, and year

- Powell-Smith V., Billington M.J.: The building regulations. Explained & Illustrated. Based on building regulations 1991. Oxford, Blackwell Scientific Publiations, 1992.
- Marchant E.W.: A complete guide to fire and buildings. Medical and Technical Publishing Co Ltd. Lancaster, England.
- Langdon-Thomas G.L.: Fire safety in buildings. Principles & practice. London, Adam & Charles Black, 1972.
- Addleson L.: Materials for building. Vol.4, Heat and fire and their effects. London, Newnes-Butterworts, 1976.

a. other supplemental materials

- Building regulations: Technical requirements on building elements, design and safety.
- Manufacture leaflets and cards about fire protective finishing and insulating materials and systems of fire protection of structural materials.

5. Specific course information

a. brief description of the content of the course (catalog description)

Lectures:

(1) Basic definitions and terms of fire safety. Influences a fire on buildings. Phases of fire, the fire curve. Building regulations on fire safety, general requirements. (2) Classification of buildings: functional categories, people threat categories. (3) Classes of fire resistance of buildings (A, B, C, D, E). Fire load density. Fire resistance of building elements (R, E, I). Exemplary fire resistances of walls and floors. Presentation of BRE instructions. (4) Selected regulations on fire resistance of elements. (5) Limiting of fire spread. Fire areas and Fire barriers – general principles and requirements. (6) Types of fire barriers. Limiting of fire spread to the outside. Ability of people escape of a building. Fire escape routes – selected principles and requirements. (7) Regulations on finishes and flues. (8) Classes of reaction on fire. (9) Testing of products on fire safety. (10) Damage of structural elements during a fire. (11) Passive fire protection of structural elements, examples of system constructional solutions. (12) Fire doors, fire glasses. Smoke ventilation: smoke barriers, smoke dampers, smoke areas.

Seminars:

(1) Explanation of the idea of the project – estimation of fire safety of the building designed in the project on BPB on 3 semester. Classification of the building: class of height, class of fire resistance, people threat category. Basic regulations on fire resistances of building elements. (2) Additional regulations on fire resistances of building elements. Regulations on limiting of fire spread. Fire areas and fire barriers – general

principles about fire spread inside and to the outside a building. (3) Regulations on ability of people escape of a building. Fire escape routes – selected principles and requirements. Final conclusions and recommendations on improving not fulfilled regulations.
Project:

Assessement of fire safety of the building designed on BPB on 3 semester according to Building Regulations in the range of fire resistance of building elements, limiting of fire spreading and fire escape. Preparing comments and descriptions according to the classes guidelines.

b. prerequisites or co-requisites

Passing the subject: Building Materials, Buildings and Physics of Buildings

c. indicate whether a required, elective, or selected elective (as per Table 5-1) course in the program

optional subject

6. Specific goals for the course

a. specific outcomes of instruction, ex. The student will be able to explain the significance of current research about a particular topic

The student can:

- use a knowledge about fire safety regulations for buildings.
- select and use fire proof construction materials in design in accordance to fire safety regulations and requirements.
- be responsible for the reliability of the results of the work and their interpretation.
- take into consideration a fire risk in buildings and to implement appropriate fire safety rules in design of buildings and their elements.
- formulate opinions regarding technical fire safety and proof of buildings and their elements.

b. explicitly indicate which of the student outcomes listed in Criterion 3 or any other outcomes are addressed by the course.

K1A_W06, K1A_U02, K1A_U11

7. Brief list of topics to be covered

1. Basic definitions and design principles for fire safety of buildings and fire protection of building structural elements with regard of building regulations.
2. Building regulations about fire safety of buildings and the principles of design of building construction elements with regard a fire protection.
3. Basic instructions of design of building construction elements made from reinforced concrete, wood and masonry with regard of fire proof.
4. Application the regulations of journal of law about fire safety in buildings.

*- Consultations were not included in the contact hours

**-per semester