



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

Sanitary and fire instalation systems

### Course

Field of study

Environmental Engineering Extramural First

Area of study (specialization)

Level of study

First-cycle studies

Form of study

part-time

Year/Semester

2/4

Profile of study

general academic

Course offered in

polish

Requirements

compulsory

### Number of hours

Lecture

18

Laboratory classes

Other (e.g. online)

Tutorials

Projects/seminars

18

### Number of credit points

4

### Lecturers

Responsible for the course/lecturer:

dr inż. Przemysław Muszyński

Responsible for the course/lecturer:

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### Prerequisites

1.Knowledge:

Basic knowledge of fluid mechanics.

2.Skills :

Applications of fundamental rights, depending on the mechanics of liquids and gases.

3.Social competencies:

Awareness of the need to constantly update and supplement knowledge and skills.



## Course objective

The acquisition by the students basic knowledge, skills in designing plumbing and fire.

## Course-related learning outcomes

### Knowledge

1. The student knows the basic concepts of water supply systems. (lectures) - [KIS\_W05, KIS\_W07]
2. The student has knowledge of the operation and construction of water supply systems. (lectures) - [KIS\_W05, KIS\_W07]
3. The student knows the possible solutions to water supply systems. (lectures) - [KIS\_W05, KIS\_W07]
4. The student has the knowledge to determine the required pressure for water supply systems. (lectures) - [KIS\_W05, KIS\_W07]
5. The student has knowledge of hydraulic calculations install hot and cold water and circulation pipe. (lectures) - [KIS\_W05, KIS\_W07]
6. The student has knowledge of the construction of the water supply connection and selection of water meters. (lectures) - [KIS\_W05, KIS\_W07]
7. The student knows the principles of operation of devices booster. (lectures) - [KIS\_W01, KIS\_W05, K\_W07]
8. The student knows the rules of dimensioning hot and cold water. (lectures) - [KIS\_W05, KIS\_W07]
9. The student has knowledge of the equipment for the preparation of hot water. (lectures) - [KIS\_W01, KIS\_W05, K\_W07]
10. The student has knowledge of the operation of the system of circulation - gravity and forced. (lectures) - [KIS\_W01, KIS\_W05, K\_W07]
11. The student has knowledge of the used materials (pipes and fittings) in sanitary systems. (lectures) - [KIS\_W01, KIS\_W05, K\_W07]
12. The student has knowledge of solutions and technologies used in sanitary systems. (lectures) - [KIS\_W05, KIS\_W07]
13. The student has the knowledge for determining the demand for water. (lectures) - [KIS\_W07]
14. The student has the knowledge to carry out the selection of system components water and sewage. (lectures) - [KIS\_W05, KIS\_W07]
15. The student has the see of the functioning and construction of fire protection systems. (lectures) - [KIS\_W05, KIS\_W07]
16. The student has the see of the functioning and construction of sewage systems. (lectures) - [KIS\_W05, KIS\_W07]



17. The student has knowledge of hydraulic calculations sewage systems. (lectures) - [KIS\_W01, KIS\_W07]

18. The student knows the rules of dimensioning sewage systems. (lectures) - [KIS\_W01, KIS\_W07]

19. The student understands the functioning of the local wastewater treatment facilities. (lectures) - [KIS\_W05, KIS\_W07]

#### Skills

1. The student is able to perform hydraulic calculations hot and cold water. (projects) - [KIS\_U14, KIS\_U15, K\_U16]

2. The student can choose the components of hot and cold water. (projects) - [KIS\_U14, KIS\_U15, K\_U16]

3. The student is able to perform calculations sewage system. (projects) - [KIS\_U14, KIS\_U15, K\_U16]

4. The student can choose the components of the sewage system. (projects) - [KIS\_U14, KIS\_U15, K\_U16]

5. The student is able to design a water supply connection and select water meter. (projects) - [KIS\_U09, KIS\_U14, K\_U16]

6. The student is able to design a sewer connection. (lectures) - [KIS\_U09, KIS\_U14, K\_U16]

7. The student is able to design the fire protection system. (lectures) - [KIS\_U09, KIS\_U14, K\_U16]

8. The student is able to design the installation of sewage from a local wastewater treatment. (lectures) - [KIS\_U09, KIS\_U14, K\_U16]

#### Social competences

1. The student understands the need for teamwork in solving theoretical and practical problems. (projects) - [KIS\_K03]

2. The student sees the need for systematic deepening and extending their competence. (projects) - [KIS\_K01]

3. The student is aware of the social role of technical university graduate. (projects) - [KIS\_K07]

#### Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Lectures (efekt: W01, W05, W07):

- a written final exam test students' knowledge.

- pass - 50% points.



Projects (efekt: U09, U14, U15, U16):

- assessment of the correctness of the project,
- assessment of knowledge of the scope of the project (colloquium),
- continuous assessment of the students (rewarding students activity).
- pass - 50% points

### Programme content

1. Basic concepts of water supply systems.
2. Classification supply systems (water systems, cold and hot, circulation).
3. Standards water requirement, standards related to the design of water supply systems.
4. Construction of water supply systems (components of the system).
5. Solutions of systems of water supply systems
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2. Classification supply systems (water systems, cold and hot, circulation).
3. Standards water requirement, standards related to the design of water supply systems.
4. Construction of water supply systems (components of the system).
5. Solutions of systems of water supply systems.
6. The definition and calculation of the required pressure for supply system.
7. Hydraulic calculations of water supply systems.
8. Installation circulation - gravitational and forced; design principles circulation.
9. Classification of devices for hot water.
10. Water supply connection and home and residential water metres.
11. Design, operation and use of equipment booster.
12. Operation of pumping systems connected in series and in parallel.
13. Design of fire protection systems.
14. Basic concepts of sewage systems.
15. Distribution of sewage systems (from municipal wastewater-economic and rainy; systems by the standard).



16. Standards of designing sewage systems.
17. Construction of sewage systems (components of the system).
18. Calculations sewage systems.
19. Local sewerage on greenfield sites.
20. Materials, solutions and technologies in sanitary systems.
21. Methods for selection of system components, cold water, hot water and sewage systems..

### Teaching methods

- lecture: informative (conventional).
- projects: using various sources of knowledge, classic problem method, project method.

### Bibliography

#### Basic

1. Chudzicki J., Sosnowski S.: Instalacje wodociągowe – projektowanie, wykonanie, eksploatacja. Warszawa 2009. Wydanie II poprawione i uzupełnione. Wyd. Seidel-Przywecki Sp. z o.o.
2. Chudzicki J., Sosnowski S.: Instalacje kanalizacyjne – projektowanie, wykonanie, eksploatacja. Warszawa 2009. Wydanie II poprawione i uzupełnione. Wyd. Seidel-Przywecki Sp. z o.o.
3. Chudzicki J.: Instalacje ciepłej wody w budynkach. Warszawa 2006. Wydanie I. Biblioteka Fundacji Poszanowania Energii. Wyd. Fundacja Poszanowania Energii.
4. Jędral W.: Pompy wirowe. Warszawa 2001. Wydanie I. Wydawnictwo Naukowe PWN.
5. Lindner J., Struś W.: Przeciwpozarowe urządzenia i instalacje wodne. Warszawa 1977. Wydanie II uzupełnione. Arkady.

#### Additional

1. Sosnowski S., Tabernacki J., Chudzicki J.: Instalacje wodociągowe i kanalizacyjne. Warszawa 2000. Wydanie I. Wyd. Instalator Polski.
2. Chybowski B.: Instalacje ciepłej wody użytkowej. Warszawa 1973. Wydanie I. Arkady.8. Żuchowicki W.: Zaopatrzenie w wodę



### Breakdown of average student's workload

	Hours	ECTS
Total workload	100	4,0
Classes requiring direct contact with the teacher	36	1,5
Student's own work (literature studies, preparation for tests/exam, project preparation) <sup>1</sup>	64	2,5

<sup>1</sup> delete or add other activities as appropriate