



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

Technical building systems (water, sewerage, gas)

### Course

Field of study

Sustainable Building Engineering

Area of study (specialization)

Level of study

First-cycle studies

Form of study

full-time

Year/Semester

3/5

Profile of study

general academic

Course offered in

english

Requirements

compulsory

### Number of hours

Lecture

30

Laboratory classes

Tutorials

Projects/seminars

15

Other (e.g. online)

### Number of credit points

3

### Lecturers

Responsible for the course/lecturer:

dr inż. Tomasz Schiller

Responsible for the course/lecturer:

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### Prerequisites

Basic mathematics and physics knowledge and structured general knowledge including key fluid mechanics issues. Reading of technical drawings as well as drawing them in a traditional way and using computer programmes and using of available sources of information.

### Course objective

Acquisition of basic knowledge and skills in the field of water, sewage and gas building installations, taking into account modern technical and material solutions related to it, needed for solving practical problems.



### Course-related learning outcomes

#### Knowledge

1. Student knows legal legislation and technical conditions which buildings should fulfill.
2. Student knows basic environmental engineering installation necessary for building functioning.
3. Student knows basic installation materials used in installation and its properties.
4. Student knows basis of environmental engineering installation design.

#### Skills

1. Student is able to project simple water, sewage and gas installation.
2. Student can choose installation material proper to projected installation.

#### Social competences

1. Student is aware of the advantages, disadvantages and limitations of technical solutions applied.
2. Student understands the need of team work in solving technical problems.

### Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Learning outcomes will be checked during multianswer test and during student's work design exercise. Obtaining a positive assessment directly related to student's design exercise requires compliance with substantive and graphical content of study provided by lecturer at the beginning of class.

Lectures - written final multianswer test (effects W1 to W4).

Evaluation of design exercises - exercise prepared by a double-student team and a multianswer test at time specified at the beginning of the semester will be assessed (effects U01, U02, K01, K02).

Mark scale (percentage / mark): 0-50 ndst, 51-60 dst, 61-70 dst+, 71-80 db, 81-90 db+, 91-100 bdb

### Programme content

#### Lectures

1. Place (location) of water, sewage and gas installations in media supply system of settlement unit. Requirements, difficulties, and tasks for the designer.
2. Methods for calculating required amount of delivered media (water and gas) and wastewater.
3. Solution which can limit water consumption and wastewater.
4. Materials used for construction of installations.
5. Rules for locating elements of installation systems in building structure together with estimation of required surface.



6. Sanitary room requirements depending on building type.
7. The most important legal and normative requirements related to design of water, sewage and gas installations.
8. Wybrane zagadnienia związane z obliczeniami i doбором elementów instalacji wodnych, kanalizacyjnych i gazowych.
9. Selected issues related to calculation and selection of water, sewage and gas installations elements.

#### Projects

1. Calculation of required quantity of the supplied media (water and gas) and discharged wastewater for building being designed.
2. Checking availability of media sources and potential wastewater receivers.
3. Comparative calculations to assess applicability of proposed solutions.
4. Selection and justification of design solution.
5. Calculation of installation by selected solution.
6. Preparation of installation drawings according to calculation of selected solution.

#### Teaching methods

Lectures - multimedia presentaiton, projects - project method

#### Bibliography

##### Basic

1. Chudzicki J., Sosnowski S., Instalacje wodociągowe. Projektowanie, wykonanie, eksploatacja. Wydawnicwto Seidel-Przeweck, Warszawa
2. Chudzicki J., Sosnowski S., Instalacje kanalizacyjne. Projektowanie, wykonanie, eksploatacja. Wydawnicwto Seidel-Przeweck, Warszawa
3. Bąkowski K., Sieci i instalacje gazowe. Poradnik projektowania, budowy i eksploatacji. Wydawnictwo Naukowe PWN, Warszawa

##### Additional



### Breakdown of average student's workload

	Hours	ECTS
Total workload	75	3,0
Classes requiring direct contact with the teacher	45	2,0
Student's own work (literature studies, preparation for laboratory tutorials, preparation for tests, project preparation) <sup>1</sup>	30	1,0

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