



COURSE DESCRIPTION CARD - SYLLABUS

Course name

Materials Technology

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

2/3

Profile of study

general academic

Course offered in

polish

Requirements

compulsory

Number of hours

Lecture

18

Laboratory classes

18

Other (e.g. online)

Tutorials

Projects/seminars

Number of credit points

4

Lecturers

Responsible for the course/lecturer:

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Responsible for the course/lecturer:

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Prerequisites

1.Knowledge:

Chemistry and physics: basic terms related to properties of solids and liquids.

2.Skills:

Ability to read technical drawings.

3.Social competencies:



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

Course objective

Acquire of basic knowledge and skills in materials technology and fittings techniques essential to solving typical practical problems appear in environmental engineering.

Course-related learning outcomes

Knowledge

1. Student knows basic chemical, physical, mechanical and technological features of materials used in environmental engineering and understand their significance (effect achieved during lectures) - [KIS_W02, KIS_W05]
2. Student has a basic knowledge concerning of using metals and alloys, polymers and sanitary ware in environmental engineering (effect achieved during lectures) - [KIS_W02, KIS_W05]
3. Student has a basic knowledge concerning of using various kind of fittings in accordance with piping materials (effect achieved during lectures) - [KIS_W02, KIS_W05]
4. Student knows and understands principle of various kind of valves (effect achieved during lectures) - [KIS_W02, KIS_W05]
5. Student has a knowledge concerning of materials resistance at external factors (effect achieved during lectures) - [KIS_W02, KIS_W05]
6. Student understands the need for appropriate selection of materials in accordance with their properties (effect achieved during lectures) - [KIS_W02, KIS_W05]
7. Student knows and understands limitations of fitting techniques used in environmental engineering (effect achieved during lectures) - [KIS_W02, KIS_W05]

Skills

1. Student can show possible application of individual materials in environmental engineering (effect achieved during laboratories) - [KIS_U06, KIS_U07]
2. Student can select material for projects for technical subjects at next years of studies (effect achieved during laboratories) - [KIS_U07, KIS_U010]
3. Student can point at possible kind of jointing for individual materials (effect achieved during laboratories) - [KIS_U06, KIS_U07]
4. Student can show application of individual kind of valves (fittings) (effect achieved during laboratories) - [KIS_U07, KIS_U010]

Social competences

1. Student understands the need for teamwork in solving theoretical and practical problems (effect achieved during laboratories) - [KIS_K02, KIS_K03]



2. Student is aware of the advantages, disadvantages and limitations technical solutions applied (effect achieved during laboratories) - [KIS_K01, KIS_K03]

3. Student is aware of fundamental principles of industrial safety during installation work (effect achieved during laboratories) - [KIS_K02, KIS_K03]

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Lectures

Written final multianswer test (effects W1 to W7). Mark scale (percentage / mark): 0-50 ndst, 51-60 dst, 61-70 dst+, 71-80 db, 81-90 db+, 91-100 bdb

Laboratory

Written final multianswer test (effects K2, U1, U2, U3). Work in groups (effects K1, K2, K3, U1, U2, U3). Mark scale (percentage / mark): 0-50 ndst, 51-60 dst, 61-70 dst+, 71-80 db, 81-90 db+, 91-100 bdb

Programme content

Basic chemical, physical, mechanical and technological properties of materials used in environmental engineering.

Group of materials used in environmental engineering: iron alloys, copper, copper alloys, other metals and their alloys, polymers, sanitary ware. Advantages, disadvantages and limitations in using of individual materials. Possible interactions between different materials or between them and environment. Classification of materials due to their properties, production technology etc. Materials marking methods. Methods and technologies for materials jointing. Tools and equipment used in various jointing technologies.

Valves (fittings) used in environmental engineering (classification, applications, advantages, disadvantages and limitations in using).

Special technical solutions of sanitary installations.

Practical exercise:

1. Sorts and dimensioning of installation element joints
2. Screwed connection of steel pipes
3. Soldered connections of copper pipes
4. Glued connections, welded and clamped connections of plastic pipes
5. Corrosion process of selected metals and their alloys
6. Fittings



7. Identification of polymers, properties of mineral materials

Teaching methods

Lectures (conversatory and problem elements of lectures) using multimedia presentation.

Laboratory clases with demonstration and assembly of instalation elements.

Bibliography

Basic

1. Bagieński J., Materiałoznawstwo instalacyjne, Wydawnictwo Politechniki Poznańskiej, Poznań 1985
2. Płuciennik M., Zimmer J., Projektowanie instalacji wodociągowych wody zimnej i ciepłej, Instytut Techniki Budowlanej, Warszawa 2012
3. Adamski M., Materiałoznawstwo instalacyjne. Ćwiczenia laboratoryjne, Wydawnictwo Politechniki Białostockiej, Białystok 2006

Additional

1. Lars-Eric J., Rury z tworzy sztucznych do zaopatrzenia w wodę i odprowadzania ścieków, Polskie Stowarzyszenie Producentów Rur i Kształtek z Tworzyw Sztucznych, Toruń 2010
2. Hyla I., Tworzywa sztuczne. Własności-przetwórstwo-zastosowanie, Wydawnictwo Politechniki Śląskiej, Gliwice 2004

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 laboratory classes, preparation for tests) ¹	64	2,5

¹ delete or add other activities as appropriate