SYLLABUS

Name: ***Chemistry (BudAB>SI3CHEMIS19)***
Name in Polish:
Name in English: ***Chemistry***

Information on course:

Course offered by department: Faculty of Civil Engineering
Course for department: Silesian University of Technology
Term: Winter semester 2025/2026
Cordinator of course edition: Dr inż. Andrzej Śliwka

Default type of course examination report:

ZAL

Language:

English

Course homepage:

https://platforma2.polsl.pl/rb/course/view.php?id=582

Short description:

Consolidation of basic knowledge in the field of chemistry with the addition of the issues of chemistry of building materials, their properties and durability. Understanding and the ability to describe chemical processes. Acquiring the ability to conduct laboratory analyzes.

Description:

LECTURES: 30 hours
Basics of chemistry - revision. Building material chemistry stasks. States of matter with a detailed description of the properties of water. Types of chemical reactions with examples in construction. Chemical equilibrium. Thermodynamics and kinetics of processes. Characteristics of building materials and their modification with an indication of mineral binding materials. Corrosion of building materials. Fundamentals of electrochemistry. Chemical research - methods. Chemical equations and stoichiometric calculations. Concrete pH testing.

LABORATORIES: 15 hours
Chemical reactions.
PH test.
Restoring the composition of hardened concrete.
Determination of chloride content in concrete.
Corrosion and dissolution of metals. Determining the corrosion risk of reinforcing steel.
Microscopic observations.

Bibliography:

[1] Czarnecki L. i in.: Chemia w budownictwie, Arkady, Warszawa 2000.
[2] Kurdowski W.: Chemia cementu i betonu, Polski Cement, Kraków 2010.
[3] Kurdowski W.: Chemia materiałów budowlanych, AGH, Kraków 2000.
[4] Hermanowicz W. i in.: Fizyczno-chemiczne badanie wody i ścieków, Arkady, Warszawa 1999.
[5] Zybura A., Jaśniok M., Jaśniok T.: Diagnostyka konstrukcji żelbetowych. Badania korozji zbrojenia i właściwości ochronnych betonu, PWN, Warszawa 2011.
[6] Molski A.: Wprowadzenie do kinetyki chemicznej, WNT, Warszawa 2001.
[7] Buchowski H., Ufnalski W.: Roztwory, WNT, Warszawa 1995.
[8] Budniok A.: Chemia Techniczna, UŚ, Katowice 1989.
[9] Bolewski A. i in.: Mineralogia Ogólna, Wyd. Geologiczne 1975.
[10] Cotton A. F. i in.: Advanced inorganic chemistry, New York, John Wiley & Sons, cop. 1999.
[11] Group work: Materials science and technology, Wiley-VCH Verlag GmbH & Co., KGaA 2013 Online.
[12] Broniewski T., Fiertak M.: Chemia budowlana : materiały pomocnicze do wykładów, Politechnika Krakowska, Kraków 1995.
[13] Szymura T.: Chemia w inżynierii materiałów budowlanych. Cz. 1, Politechnika Lubelska, Lublin 2012.
[14] Woszczak T.: Chemia: dla studentów budownictwa lądowego, Politechnika Świętokrzyska, Kielce 2000.

Learning outcomes:

KNOWLEDGE
(1) Has the knowledge from selected areas of chemistry that allows the description of the states of matter and the understanding of the fundamental chemical processes of importance in biulding, used to assess the suitability of building materials, methods for the safe handling and predict their durability - [faculty effect K1A_W01]

SKILLS
(2) Can perform simple experiments and laboratory observations leading to assess the quality of used building materials - [faculty effect K1A_U05]
(3) Knows the properties of building materials and is able to experimentally assess their quality - [faculty effect K1A_U06]

Assessment methods and assessment criteria:

PRELIMINARY REQUIREMENTS: no requirements

CONDITIONS FOR PASSING THE SUBJECT:
1) passing tests from the lecture part,
2) active participation in all laboratory classes,
3) preparation of reports on laboratory tests, which must be received by the teacher and positively assessed.

FINAL GRADE:
The final grade is the weighted average of the lecture grade (the average grade of the written tests) (70%) and the laboratory grade (30%).

In order to have partial grades rewritten, students should contact the lecturer within the first two weeks of the semester..

The syllabus is valid from the winter semester of the 2025/2026 academic year, and its content is not subject to change during the semester.

Information on course edition:

Default type of course examination report:
ZAL
Bibliography:
missing bibliography in English

Details of classes and study groups

lecture (30 hours)

Study groups details

Group number 1

Class instructors:
Dr inż. Barbara Słomka-Słupik

laboratory classes (15 hours)

Study groups details

Group number 1

Class instructors:
Dr inż. Andrzej Śliwka

Element of course groups in various terms:

Course group description	First term	Last term
missing group description in English (BudAB-S1-2019-sem3)	2020/2021-Z	

Course credits in various terms:

<without a specific program>

Type of credits	Number	First term	Last term
European Credit Transfer System (ECTS)	5	2020/2021-Z	