Field of study Profile of study (general academic, practical) Year /Semester Civil Engineering First-cycle Studies general academic 1 / 2			STUDY MODULE D	ESCRIPTION FORM	
Civil Engineering First-cycle Studies (general academic, practical) general academic 1/2 Elective path/specialty Subject offerre in: Polish Course (computany, electiv obligatory Cycle of study: First-cycle studies part-time No. of hours part-time No. of redits Lecture: 20 Classes: - Laboratory: 10 Project/seminars: 4 Status of the course in the study program (Basic, major, other) (university-wide, from another field) 6 4 100% technical sciences Technical sciences 4 100% 4 100% Responsible for subject / lecturer: drint: 4 100% 4 100% rist: agnieszka. Slosarczyk general 4 100% 4 100% rechnical sciences Knowledge of periodic table and the properties of basic chemical compounds (organic and inorganic). Knowledge of basic physical phenomena and chemical processes. 4 100% Skills Ability to write chemical reactions and do the basic stoichiometric calculations. 3 Social Awareness of the course: Course compounds (organic and inorganic). Knowled			stry		Code 1010104121010110053
Elective path/specialty - Subject offered in: Polish Course (computancy, electiv obligatory Cycle of study: First-cycle studies Form of study (full-time, part-time) No. of credits No. of hours Lecture: 20 Classes: - 4 Status of the course in the study program (Basic, major, other) major form of study (full-time, part-time) No. of credits Education areas and fields of science and at major form field ECTS distribution (number and %) technical sciences Technical sciences 4 100% Technical sciences 4 100% 4 100% Responsible for subject / lecturer: drin:			st-cycle Studies	(general academic, practical)	
Cycle of study: First-cycle studies Form of study (full-time,part-time) No. of hours			-	Subject offered in:	Course (compulsory, elective)
No. of hours No. of credits Lacture: 20 Classes: Laboratory: 10 Project/seminars: No. of credits Status of the course in the study program (Basic, major, other) (university-wide, from another field) ECTS distribution (number and %) Education areas and fields of science and att ECTS distribution (number and %) 4 100% technical sciences 4 100% 4 100% Responsible for subject / lecturer: dr in2. Agnieszka Slosarczyk 4 100% ren:: Agnieszka slosarczyk @put.pozna.pl tel. +49816652163 4 100% Prerequisites in terms of knowledge, skills and social competencies: 1 Knowledge Ability to write chemical reactions and do the basic stoichiometric calculations. 3 Social competencies Ability to write chemical processes occurring during production and application of building material skills. Assumptions and objectives of the course: To gain the basic knowledge of physicochemical processes occurring during production and application of building material choice, depending on their physicochemical processes occurring in building materials during their production and application - [K_W01, K_W02, K_W11, K_W13] 1. The student has sold knowledge the student is able to characterise the physicochemical application [K_W02, K_W11, K_W13]	Cycle of	study:			obligatory
Lecture: 20 Classes: - Laboratory: 10 Project/seminars: - 4 Status of the course in the study program (Basic, major, other) (university-wide, from another fileid) ECTS distribution (number and %) Education areas and fields of sciences From field ECTS distribution (number and %) 4 100% 4 100% 4 100% 4 100% 4 100% 4 100% 4 100% 4 100% 4 100% 4 100% 4 100% 4 100% 4 100% 4 100% 4 100% 4 100% 4 100% 4 100% 4 100% 4 100% 4 100% 4 100% 4 100% 4 100% 4 100% 4 100% 4 100% 4 100% 4 100% 4 100% 4 100% 4 100% 4 100% 4 100% 4 100% 4 <		First-cyc	cle studies	part-t	ime
Eutonicity: 10 FlogEutsent inters. Status of the course in the study program (Basic, major, other) (university-wide, from another field) Education areas and fields of science and art from field Education areas and fields of science and art EGTS distribution (number and %) technical sciences 4 100% Technical sciences 4 100% drinz, Agnieszka Slosarczyk email: agnieszka.slosarczyk @put.poznan.pl 4 100% Faculty of CWI and Environmental Engineering Piotrow 5 str., 60-965 Poznań Faculty of CWI and Environmental Engineering Piotrow 5 str., 60-965 Poznań Knowledge of periodic table and the properties of basic chemical compounds (organic and inorganic). Knowledge of basic physical phenomena and chemical processes. 2 Skills Ability to write chemical reactions and do the basic stoichiometric calculations. 3 Social competencies Awareness of the necessity for constant updating and complementing one's knowledge and skills. 1 Net basic knowledge of physicochemical processes occurring during production and application of building material study materials during their production and application of building material building materials during their production and application [K_W01, K_W02, K_W11, K_W13] 2 Study outcomes and reference to the educational results for a field of study	No. of h				
major from field Education areas and fields of science and at ECTS distribution (number and %) technical sciences 4 100% Technical sciences 4 100% Responsible for subject / lecturer: 4 100% drinz. Agnieszka Slosarczyk email: agnieszka.slosarczyk 4 100% Prerequisites in terms of knowledge, skills and social competencies: 7 1 Knowledge Knowledge of periodic table and the properties of basic chemical compounds (organic and inorganic). Knowledge of basic physical phenomena and chemical processes. 2 Skills Ability to write chemical reactions and do the basic stoichiometric calculations. 3 Social competencies Awareness of the necessity for constant updating and complementing one's knowledge and skills. Assumptions and objectives of the course: 1 Study outcomes and reference to the educational results for a field of study Ynowledge: 1 1. The student knows and understands theoretical basics of the chemical and physicochemical processes occurring in building materials during their production and application [K_W01, K_W02, K_W11, K_W13] 1. The student knows and understands theoretical basics of the chemical and physicochemical properties of building materials with reference to their practical application [K_W02, K_W01, K_W03, K_W03, K_W04, K_W11, K_W114]			Eaberatory:	Project/seminars:	- 4
Education areas and fields of science and art technical sciences Technical sciences Technical sciences Technical sciences A 100% Responsible for subject / lecturer: dr inż. Agnieszka Ślosarczyk @put.poznan.pl tet44861662168 Faculty of Civil and Environmental Engineering Piotrowo 5 str., 60-965 Poznah Prerequisites in terms of knowledge, skills and social competencies: 1 Knowledge Knowledge of periodic table and the properties of basic chemical compounds (organic and inorganic). Knowledge of basic physical phenomena and chemical processes. 2 Skills Ability to write chemical reactions and do the basic stoichiometric calculations. 3 Social competencies Study outcomes and reference to the educational results for a field of study Knowledge: 1. The student knows and understands theoretical basics of the chemical and physicochemical processes occurring in building materials during their production and application of building material Study outcomes and reference to the educational results for a field of study Knowledge: 1. The student knows and understands theoretical basics of the chemical and physicochemical processes occurring in building materials during their production and application [K_W01, K_W02, K_W11, K_W13] K.W02, K_W03, K_W03, K_W11, K_W11, K_W13 L. W04, K_W03, K_W04, K_W10, K_W11, H_W14 Skills. 1. On the basis of the gained knowledge to building materials research methods [K_W02, K_W03, K_W03, K_U03, K_U05] Cocial competencies: 1. The student has basid knowledge to student is able to characterise the physicochemical properties of building materials and the adequately choose types of building materials with reference to their practical application [K_U17, K_K03, K_U03, K_U03, K_U05] Social competencies: 1. The student has basic theoretical reactions describing processes occurring in mineral bonds, during polymer comp	Status o	-			,
technical sciences 4 100% Technical sciences 4 100% Responsible for subject / lecturer: drin2, Agnieszka Ślosarczyk 4 100% drin2, Agnieszka Ślosarczyk email: agnieszka.slosarczyk @put.poznan.pl tet.+48616652168 Facutly of Civil and Environmental Engineering Piotrowo 5 str., 60-965 Poznań Facuty of Civil and Environmental Engineering Piotrowo 5 str., 60-965 Poznań Forequisites in terms of knowledge, skills and social competencies: 1 1 Knowledge Rowledge of periodic table and the properties of basic chemical compounds (organic and inorganic). Knowledge of basic physical phenomena and chemical processes. 2 Skills Ability to write chemical reactions and do the basic stoichiometric calculations. 3 Social competencies Awareness of the necessity for constant updating and complementing one's knowledge and skills. Assumptions and objectives of the course: To gain the basic knowledge of physicochemical processes occurring during production and application of building material building material during their production and application [K_W02, K_W11, K_W13] 2. The student knows and understands theoretical basics of the chemical and physicochemical processes occurring in building materials during their production and application [K_W02, K_W11, K_W13] 2. The student knowledge of building material choice, depending on their physi				tro	
Technical sciences 4 100% Responsible for subject / lecturer: dr in2. Agnieszka Ślosarczyk dr in2. Agnieszka Ślosarczyk email: agnieszka. slosarczyk@put.poznan.pl tiel 48616562168 Faculty of Civil and Environmental Engineering Piotrowo 5 str., 60-965 Poznań Prerequisites in terms of knowledge, skills and social competencies: 1 Knowledge Knowledge of periodic table and the properties of basic chemical processes. 2 Skills Ability to write chemical reactions and do the basic stoichiometric calculations. 3 Social competencies Awareness of the necessity for constant updating and complementing one's knowledge and skills. Assumptions and objectives of the course: To gain the basic knowledge of physicochemical processes occurring during production and application of building material building materials during their production and application [K_W01, K_W02, K_W11, K_W13] 2. The student knows and understands theoretical basics of the chemical and physicochemical processes occurring in building materials during their production and application [K_W02, K_W11, K_W13] 2. The student knowledge of building material choice, depending on their physicochemical and application [K_W02, K_W04, K_W10, K_W11, K_W11, K_W13] 2. The student has a basic knowledge the student is able to characterise the physicochemical application [K_W17, K_K03, K_U03, K_U04] 2. The student is able to write chemical reactions describi	Educatio	on areas and fields of sci	ence and art		
Responsible for subject / lecturer: drin2. Agrieszka Ślosarczyk emai: agnieszka slosarczyk@put.poznan.pl tel. +48616652168 Faculty of Civil and Environmental Engineering Piotrowo 5 str., 60-965 Poznan Prerequisites in terms of knowledge, skills and social competencies: 1 Knowledge Ability to write chemical reactions and do the basic stoichiometric calculations. 2 Skills Ability to write chemical reactions and do the basic stoichiometric calculations. 3 Social competencies Awareness of the course: To gain the basic knowledge of physicochemical processes occurring during production and application of building material skills. Study outcomes and reference to the educational results for a field of study Knowledge: 1. The student knows and understands theoretical basics of the chemical and physicochemical processes occurring in building materials during their production and application [K_W01, K_W02, K_W11, K_W13] 2. The student has solid knowledge of building material choice, depending on their physicochemical and applicable propert as well as heishe has a basic knowledge to building materials research methods [K_W02, K_W03, K_W04, K_W10, K_W11-14] Skills: 1 1. On the basis of the gained knowledge the student is able to characterise the physicochemical propertis of building materials an	techn	nical sciences			4 100%
dr inž. Agnieszka ślosarczyk emaii: agnieszka slosarczyk @put.poznan.pl tel. +48616652168 Faculty of Civil and Environmental Engineering Piotrowo 5 str., 60-965 Poznań Prerequisites in terms of knowledge, skills and social competencies: 1 Knowledge Rowledge Knowledge of periodic table and the properties of basic chemical compounds (organic and inorganic). Knowledge of basic physical phenomena and chemical processes. 2 Skills 3 Social competencies Awareness of the necessity for constant updating and complementing one's knowledge and skills. Assumptions and objectives of the course: To gain the basic knowledge of physicochemical processes occurring during production and application of building material 1. The student knows and understands theoretical basics of the chemical and physicochemical processes occurring in building materials during their production and application [K_W01, K_W02, K_W11, K_W13] 2. The student has solid knowledge of building material choice, depending on their physicochemical and applicable propert as well as he/she has a basic knowledge the student is able to characterise the physicochemical processes occurring in building materials and to adequately choose types of building materials with reference to their practical application [K_U17, K_K03, K_U03, K_U03] 2. The student has solid knowledge the student is able to characterise the physicochemical properties of building materials wi		Technical scie	ences		4 100%
1 Knowledge inorganic). Knowledge of basic physical phenomena and chemical processes. 2 Skills Ability to write chemical reactions and do the basic stoichiometric calculations. 3 Social competencies Awareness of the necessity for constant updating and complementing one's knowledge and skills. Assumptions and objectives of the course: To gain the basic knowledge of physicochemical processes occurring during production and application of building material Study outcomes and reference to the educational results for a field of study Knowledge: 1. The student knows and understands theoretical basics of the chemical and physicochemical processes occurring in building materials during their production and application [K_W01, K_W02, K_W11, K_W13] 2. The student knows and understands theoretical basics of the chemical and physicochemical processes occurring in building materials during their production and application [K_W01, K_W02, K_W11, K_W13] 2. The student has solid knowledge of building material choice, depending on their physicochemical and applicable propert as well as he/she has a basic knowledge of building materials research methods [K_W02, K_W03, K_W04, K_W10, K_W11-14] Skills: 1. On the basis of the gained knowledge the student is able to characterise the physicochemical properties of building materials with reference to their practical application [K_U17, K_K03, K_U03, K_U05] 2. The student is able to write chemical reactions describing processes occurring in mineral bonds, during polymer compour creation and in corrosion processes of building materials [K_U17	ema tel Faci Piot	ill: agnieszka.slosarcz +48616652168 ulty of Civil and Envirc rowo 5 str., 60-965 Pc	yk@put.poznan.pl onmental Engineering oznań	d social competencies:	
2 Skills 3 Social competencies 3 Social competencies Assumptions and objectives of the course: To gain the basic knowledge of physicochemical processes occurring during production and application of building material Study outcomes and reference to the educational results for a field of study Knowledge: 1. The student knows and understands theoretical basics of the chemical and physicochemical processes occurring in building materials during their production and application [K_W01, K_W02, K_W11, K_W13] 2. The student has solid knowledge of building materials research methods [K_W02, K_W03, K_W04, K_W10, K_W11-14] Skills: 1. On the basis of the gained knowledge the student is able to characterise the physicochemical properties of building materials with reference to their practical application [K_U17, K_K03, K_U03, K_U03, K_U05] 2. The student is able to write chemical reactions describing processes occurring in mineral bonds, during polymer compour creation and in corrosion processes of building materials [K_U17, K_K03, K_U03, K_U05] Social competencies: 1. The student has the ability to plan team work, to divide tasks among the members of the research team, to critically disct the results and formulate collaborative conclusions (conclusions based on the team work) [K_U01-	1	Knowledge	Knowledge of periodic table and inorganic). Knowledge of basic p	the properties of basic chemica	I compounds (organic and cal processes.
S competencies skills. Assumptions and objectives of the course: To gain the basic knowledge of physicochemical processes occurring during production and application of building material Study outcomes and reference to the educational results for a field of study Knowledge: 1. The student knows and understands theoretical basics of the chemical and physicochemical processes occurring in building materials during their production and application [K_W01, K_W02, K_W11, K_W13] 2. The student has solid knowledge of building material choice, depending on their physicochemical and applicable propert as well as he/she has a basic knowledge of building materials research methods [K_W02, K_W03, K_W04, K_W10, K_W11-14] Skills: 1. On the basis of the gained knowledge the student is able to characterise the physicochemical properties of building materials with reference to their practical application [K_U17, K_K03, K_U03, K_U05] 2. The student is able to write chemical reactions describing processes occurring in mineral bonds, during polymer compour creation and in corrosion processes of building materials [K_U17, K_K03, K_U03, K_U05] Social competencies: 1. The student has the ability to plan team work, to divide tasks among the members of the research team, to critically disct the results and formulate collaborative conclusions (conclusions based on the team work) [K_U01-	2	Skills	Ability to write chemical reaction	s and do the basic stoichiometri	c calculations.
To gain the basic knowledge of physicochemical processes occurring during production and application of building material Study outcomes and reference to the educational results for a field of study Knowledge: 1. The student knows and understands theoretical basics of the chemical and physicochemical processes occurring in building materials during their production and application [K_W01, K_W02, K_W11, K_W13] 2. The student has solid knowledge of building material choice, depending on their physicochemical and applicable propert as well as he/she has a basic knowledge of building materials research methods [K_W03, K_W04, K_W10, K_W11-14] Skills: 1. On the basis of the gained knowledge the student is able to characterise the physicochemical properties of building materials and to adequately choose types of building materials with reference to their practical application [K_U17, K_K03, K_U03, K_U05] 2. The student is able to write chemical reactions describing processes occurring in mineral bonds, during polymer compour creation and in corrosion processes of building materials [K_U17, K_K03, K_U05] Social competencies: 1. The student has the ability to plan team work, to divide tasks among the members of the research team, to critically discut the results and formulate collaborative conclusions (conclusions based on the team work) [K_U01-	3			constant updating and complement	enting one's knowledge and
Study outcomes and reference to the educational results for a field of study Knowledge: 1. The student knows and understands theoretical basics of the chemical and physicochemical processes occurring in building materials during their production and application [K_W01, K_W02, K_W11, K_W13] 2. The student has solid knowledge of building material choice, depending on their physicochemical and applicable propert as well as he/she has a basic knowledge of building materials research methods [K_W02, K_W03, K_W04, K_W10, K_W11-14] Skills: 1. On the basis of the gained knowledge the student is able to characterise the physicochemical properties of building materials and to adequately choose types of building materials with reference to their practical application [K_U17, K_K03, K_U03, K_U05] 2. The student is able to write chemical reactions describing processes occurring in mineral bonds, during polymer compout creation and in corrosion processes of building materials [K_U17, K_K03, K_U03, K_U05] Social competencies: 1. The student has the ability to plan team work, to divide tasks among the members of the research team, to critically discrete results and formulate collaborative conclusions (conclusions based on the team work) [K_U01-	Assu	mptions and obj	ectives of the course:		
Knowledge: 1. The student knows and understands theoretical basics of the chemical and physicochemical processes occurring in building materials during their production and application [K_W01, K_W02, K_W11, K_W13] 2. The student has solid knowledge of building material choice, depending on their physicochemical and applicable propert as well as he/she has a basic knowledge of building materials research methods [K_W02, K_W03, K_W04, K_W10, K_W11-14] Skills: 1. On the basis of the gained knowledge the student is able to characterise the physicochemical properties of building materials and to adequately choose types of building materials with reference to their practical application [K_U17, K_K03, K_U03, K_U05] 2. The student is able to write chemical reactions describing processes occurring in mineral bonds, during polymer compour creation and in corrosion processes of building materials [K_U17, K_K03, K_U03, K_U05] Social competencies: 1. The student has the ability to plan team work, to divide tasks among the members of the research team, to critically discut the results and formulate collaborative conclusions (conclusions based on the team work) [K_U01-	To gair	n the basic knowledge	of physicochemical processes oc	curring during production and a	pplication of building materials.
 The student knows and understands theoretical basics of the chemical and physicochemical processes occurring in building materials during their production and application [K_W01, K_W02, K_W11, K_W13] The student has solid knowledge of building material choice, depending on their physicochemical and applicable propert as well as he/she has a basic knowledge of building materials research methods [K_W03, K_W04, K_W10, K_W11-14] Skills: On the basis of the gained knowledge the student is able to characterise the physicochemical properties of building materials and to adequately choose types of building materials with reference to their practical application [K_U17, K_K03, K_U03, K_U05] The student is able to write chemical reactions describing processes occurring in mineral bonds, during polymer compour creation and in corrosion processes of building materials [K_U17, K_K03, K_U03, K_U05] Social competencies: The student has the ability to plan team work, to divide tasks among the members of the research team, to critically discretion the results and formulate collaborative conclusions (conclusions based on the team work) [K_U01- 			mes and reference to the	educational results for	a field of study
 building materials during their production and application [K_W01, K_W02, K_W11, K_W13] 2. The student has solid knowledge of building material choice, depending on their physicochemical and applicable propert as well as he/she has a basic knowledge of building materials research methods [K_W02, K_W03, K_W04, K_W10, K_W11-14] Skills: 1. On the basis of the gained knowledge the student is able to characterise the physicochemical properties of building materials and to adequately choose types of building materials with reference to their practical application [K_U17, K_K03, K_U03, K_U05] 2. The student is able to write chemical reactions describing processes occurring in mineral bonds, during polymer compound creation and in corrosion processes of building materials [K_U17, K_K03, K_U03, K_U05] Social competencies: 1. The student has the ability to plan team work, to divide tasks among the members of the research team, to critically discut the results and formulate collaborative conclusions (conclusions based on the team work) [K_U01- 		-			
 2. The student has solid knowledge of building material choice, depending on their physicochemical and applicable propert as well as he/she has a basic knowledge of building materials research methods [K_W02, K_W03, K_W04, K_W10, K_W11-14] Skills: 1. On the basis of the gained knowledge the student is able to characterise the physicochemical properties of building materials and to adequately choose types of building materials with reference to their practical application [K_U17, K_K03, K_U03, K_U05] 2. The student is able to write chemical reactions describing processes occurring in mineral bonds, during polymer compour creation and in corrosion processes of building materials [K_U17, K_K03, K_U03, K_U05] Social competencies: 1. The student has the ability to plan team work, to divide tasks among the members of the research team, to critically discut the results and formulate collaborative conclusions (conclusions based on the team work) [K_U01- 	1. The building	student knows and ur materials during the	nderstands theoretical basics of the	e chemical and physicochemica	I processes occurring in
Skills: 1. On the basis of the gained knowledge the student is able to characterise the physicochemical properties of building materials and to adequately choose types of building materials with reference to their practical application [K_U17, K_K03, K_U03, K_U05] 2. The student is able to write chemical reactions describing processes occurring in mineral bonds, during polymer compour creation and in corrosion processes of building materials [K_U17, K_K03, K_U03, K_U05] Social competencies: 1. The student has the ability to plan team work, to divide tasks among the members of the research team, to critically discut the results and formulate collaborative conclusions (conclusions based on the team work) [K_U01-	2. The as well	student has solid know as he/she has a basic	wledge of building material choice c knowledge of building materials	, depending on their physicoche	
 On the basis of the gained knowledge the student is able to characterise the physicochemical properties of building materials and to adequately choose types of building materials with reference to their practical application [K_U17, K_K03, K_U03, K_U05] The student is able to write chemical reactions describing processes occurring in mineral bonds, during polymer compound creation and in corrosion processes of building materials [K_U17, K_K03, K_U03, K_U05] Social competencies: The student has the ability to plan team work, to divide tasks among the members of the research team, to critically discut the results and formulate collaborative conclusions (conclusions based on the team work) [K_U01- 	• -	· - · - · ·	· - •		
creation and in corrosion processes of building materials [K_U17, K_K03, K_U03, K_U05] Social competencies: 1. The student has the ability to plan team work, to divide tasks among the members of the research team, to critically discut the results and formulate collaborative conclusions (conclusions based on the team work) [K_U01-	materia	als and to adequately	choose types of building materials		
1. The student has the ability to plan team work, to divide tasks among the members of the research team, to critically discut the results and formulate collaborative conclusions (conclusions based on the team work) [K_U01-	creatio	n and in corrosion pro	cesses of building materials [K		onds, during polymer compound
the results and formulate collaborative conclusions (conclusions based on the team work) [K_U01-	Socia	I competencies:			
	the res	ults and formulate coll	laborative conclusions (conclusion	s among the members of the res ns based on the team work) [K	search team, to critically discuss

Assessment methods of study outcomes

Lectures

Two colloquiums - the dates given at the beginning of the semester. First meant to check the ability to write chemical equations and doing basic chemical calculations. The second checks the knowledge of basic physicochemical properties of building materials.

Laboratory classes

A short verbal test at the beginning of the class. A colloquium at the end of the semester covering the material of the laboratory classes.

Course description

Lecture

Structure and chemical properties of water. Water for constructional purposes. Chemical reactions in aqueous environment. Complex systems occurring in construction; colloidal systems.

Types of chemical compounds and chemical processes occurring during production, application and exploitation of building materials.

Chemical composition and structure of building materials as determinants of their physicomechanical and applicable properties. Thermodynamic conditions of durability of building materials. Phase transitions.

Basics of crystal chemistry of building materials. The structure of silicates and aluminosilicate minerals.

Kinetics of chemical reactions occurring in construction. Catalysis.

Chemistry of mineral binders. Hydraulic and air binders. Processes occurring during obtaining, bonding and hardening of cement, lime, gypsum, silicate and magnesium binders.

Structure and properties of metals applied in construction.

Polymers as components of plastics used in construction, their properties and obtaining.

Processes occurring during degradation of building materials. Corrosion of concrete. Corrosion of reinforcing bars in reinforced concrete. Corrosion of polymers.

Recycling of building materials.

Topics of the laboratory classes:

1. Basics of the chemical quality analysis. Identification analysis of chosen cations.

2. Basics of the chemical quantity analysis. Defining the sodium hydroxide concentration with the use of the acid-base titration.

3. Hydrolysis of the salts and defining the pH of the aqueous solutions.

4. Kinetics of chemical reactions.

5. Corrosion of building materials. Estimation of the corrosion stage of cement stone and definition of the stage of concrete carbonisation.

6. Chemical corrosion of steel. Estimation of the corrosion strength of ordinary steel and that with anti-corrosive coating.

Basic bibliography:

1. W. Skalmowski, Chemia materiałów budowlanych, Arkady 1997

2. L. Czarnecki, T. Broniewski, O. Henning, Chemia w budownictwie, Arkady, Warszawa 1996

3. W. Kurdowski, Chemia cementu i betonu, PWN, Warszawa 2010

Additional bibliography:

Result of average student's workload

Activity		Time (working hours)
1. Participation in lectures		20
2. Participation in laboratories	10	
3. Preparation to laboratories		5
4. Preparation to final laboratory's test		5
5. Preparation to final lecture's test		10
Student's wo	rkload	
Source of workload	hours	ECTS
Total workload	100	4
Contact hours	35	3
Practical activities	10	1