



## Subject card

Subject name and code	Inorganic Chemistry, PG_00048909						
Field of study	Chemistry in Construction Engineering						
Date of commencement of studies	October 2022		Academic year of realisation of subject		2022/2023		
Education level	first-cycle studies		Subject group		Obligatory subject group in the field of study Subject group related to scientific research in the field of study		
Mode of study	Full-time studies		Mode of delivery		at the university		
Year of study	1		Language of instruction		Polish		
Semester of study	1		ECTS credits		7.0		
Learning profile	general academic profile		Assessment form		exam		
Conducting unit	Department of Inorganic Chemistry -> Faculty of Chemistry						
Name and surname of lecturer (lecturers)	Subject supervisor		prof. dr hab. inż. Jarosław Chojnacki				
	Teachers						
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	15.0	30.0	0.0	0.0	75
	E-learning hours included: 0.0						
Learning activity and number of study hours	Learning activity	Participation in didactic classes included in study plan		Participation in consultation hours		Self-study	SUM
	Number of study hours	75		20.0		80.0	175
Subject objectives	Understanding of principles of inorganic chemistry						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	K6_W03		Has a well-established knowledge of inorganic chemistry, including the knowledge necessary to describe and understand the chemical phenomena and processes occurring in construction materials and to measure and determine the parameters of these processes		[SW1] Assessment of factual knowledge		
	K6_U07		Can make use of the knowledge of reaction models to explanation of actual chemical processes and phenomena		[SU2] Assessment of ability to analyse information		
	K6_K01		can identify given inorganic substance based on trial chemical reactions and describe its chemical properties (acid, base, salt, oxidizer, reducer)		[SK3] Assessment of ability to organize work [SK5] Assessment of ability to solve problems that arise in practice		

Subject contents	LECTURE  Scope and role of inorganic chemistry. Origin and distribution of the elements. Basic terms of crystallography. Acids, bases, salts, complex compounds - properties. Complex formation equilibria. Structure, properties and nomenclature of coordination compounds. Theoretical basis of qualitative analysis. Basis of structural chemistry of solids. Systematic review of properties, occurrence and chemical reactivity of all of the elements based on the periodic table. Methods of obtaining and applications of the elements and their compounds focusing on materials used in construction industry.  TUTORIALS  Ionic equilibrium - degree of ionisation (protolysis), Ostwald rule of dissolution, calculation of pH. Equilibria in solutions of complex compounds, solubility of deposits in aqueous solutions, solubility product.  LABORATORY Laboratory basic equipment and simple operations (precipitation, filtration etc.). Qualitative analysis of cations and anions focusing on substances used in construction industry.		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Exam	60.0%	50.0%
	Seminars: two written tests	60.0%	25.0%
	Laboratory: completion of tasks	60.0%	25.0%
Recommended reading	Basic literature	Bielański A. , Podstawy Chemii Nieorganicznej, Wydawnictwo Naukowe PWN 2010, jednotomowa lub tom I i II.  Cox P.A., Krotkie wykłady. Chemia Nieorganiczna, PWN, Warszawa, 2003.  Ćwiczenia rachunkowe - skrypt <a href="#">on-line</a> . Praca zbiorowa, Katedra Chemii Nieorganicznej PG  J. Prejzner: Chemia nieorganiczna. Laboratorium, Wydawnictwo PG, 2004  L. Jones, P. Atkins, Chemia ogólna. Częsteczki, materia, reakcje, Wydawnictwo Naukowe PWN, Warszawa 2009, tom I i II.	
	Supplementary literature	L. Kolditz (red.), Chemia Nieorganiczna cz. I i II, Wydawnictwo Naukowe PWN, Warszawa 1994 F.A. Cotton, G. Wilkinson, P.L. Gaus, Chemia nieorganiczna. Podstawy. Wydawnictwo Naukowe PWN, Warszawa 1995 J. Minczewski, Z. Marczenko, Chemia analityczna T1. Podstawy teoretyczne i analiza jakościowa, Wydawnictwo Naukowe PWN, 2010.	
	eResources addresses	Adresy na platformie eNauczanie:	
Example issues/ example questions/ tasks being completed	Characterize elements of the 14-th group of the periodic table of the elements  Identify ionic composition of the provided salt sample.  Determine empirical and molecular formula for a hydrocarbon, containing 81,8% of C, if its density at STP is 1,96 g/L.		
Work placement	Not applicable		