<table>
<tr><td colspan="2">NAME OF THE COURSE</td><td colspan="5">Inorganic Chemistry</td></tr>
<tr><td>Code</td><td>PMC109</td><td>Year of study</td><td colspan="4">3</td></tr>
<tr><td>Course teacher</td><td>Assistant Professor PhD Perica Bošković</td><td>Credits (ECTS)</td><td colspan="4">4.0</td></tr>
<tr><td rowspan="2">Associate teachers</td><td rowspan="2"></td><td rowspan="2">Type of instruction (number of hours)</td><td>L</td><td>S</td><td>E</td><td>F</td></tr>
<tr><td>45</td><td>15</td><td></td><td></td></tr>
<tr><td>Status of the course</td><td>Basic</td><td>Percentage of application of e-learning</td><td colspan="4">10%</td></tr>
<tr><td colspan="7">COURSE DESCRIPTION</td></tr>
<tr><td>Course objectives</td><td colspan="6">Introduce students with the chemical reactivity of elements along the periodic table of elements, and properties and composition of common chemical substances. Develop students ability perceiving similarities and differences between inorganic compounds, and understanding changes in inorganic substances in different physical and chemical conditions.</td></tr>
<tr><td>Course enrolment requirements and entry competences required for the course</td><td colspan="6"></td></tr>
<tr><td>Learning outcomes expected at the level of the course (4 to 10 learning outcomes)</td><td colspan="6">After completing the course, students will be able to:
1. distinguish basic characteristics and methods of obtaining the chemical elements of the main group along the periodic table of elements
2. Identify the type and properties of transition metal compounds
3. Classify compounds based on their properties
4. Conclude acid, basic and amphoteric properties of salt
5. Know the most common crystalline salt structures
6. Provide possible reaction mechanisms and outcomes of chemical reactions
7. Perform simple chemical reactions.</td></tr>
<tr><td>Course content broken down in detail by weekly class schedule (syllabus)</td><td colspan="6">Lectures
1. Hydrogen - position in periodic table of elements, properties, compounds of hydrogen with positive degree of oxidation (3 hours)
2. Noble gases, group properties, formation and use, xenon compounds (3 hours)
3. Introduction to Halogen Elements, Group Properties (3 hours)
4. Fluoride, properties and synthesis. Chlorine properties and formation, chlorine compounds. Bromine, iodine, properties and synthesis and typical compounds (3 hours)
5. Introduction to Chalcogen elements chemistry. (3 hours)
6. Oxygen, properties and synthesis, allotrope modifications, structure of oxygen molecule, overview of compounds.
7. Sulfur, properties, synthesis and allotropes. Oxides and oxoacids, halides of sulfur. (3 hours)
8. Nitrogen group, group properties, nitrogen, properties and preparation, ammonia, nitric acid and other compounds of nitrogen, nitrogen fixation (3 hours)
9. Phosphorus, allotropes, oxides and oxoacids of phosphorus, phosphides. Phosphates, properties and structures. (3 hours)
10. Carbon group, group properties, elements by degree of oxidation (3 hours)
11. Chemistry of carbon group of elements. Properties and structure of carbon allotropes. Catenation, multiple bonds. Carbon oxides. (3 hours)
12. Silicon chemistry, comparison of carbon and silicon chemistry. Silicates and their structure. (3 hours)
13. Group of Boron, group properties, elements by degree of oxidation, borane, boric acid. Properties of aluminum, aluminum compounds. (3 hours)
14. Alkaline and alkaline earth metals, transition elements (3 hours)
15. Transition elements (3 hours)

Seminar:
1. Balancing chemical reactions, writing and balancing redox reaction</td></tr>
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	2. Reactions and characteristics of hydrogen, hydrogen synthesis reactions, reduction properties of hydrogen 3. Reaction characteristics of halogen elements, reactions of chlorine. Reactions of disproportionation of chlorine in alkaline solutions, oxidation properies of halogens and their compounds 4. Reaction characteristics of chalcogenic elements, oxygen reactions and ozone, oxidative properties of oxygen, sulfur reaction, transition reaction from elemental sulfur to sulfuric acid, oxidative and dehydratation properties of sulfuric acid 5. Reaction characteristics of nitrogen group elements, reactions of nitrogen, transition reactions from ammonia to nitric acid, oxidation activity of nitric acid 6. Oxidation reactions from phosphorus to phosphoric acid 7. Reaction characteristics of carbon group elements, carbon oxide synthesis 8. Reduction properties of CO, deposition of carbonates 9. Reactions characteristic of Boron group elements, reactions of boric acid, boric acid dissolving in water 10. Reducing effect of aluminium, aluminothermic reaction, obtaining crystalline boron, reaction characteristics of the major groups metals 11. Alkaline and alkaline earth metal reactions with water, alkaline and alkaline earth metal 12. Reaction characteristics of transition metals, balance between chromates and dichromates, iron compounds 13. Noble metals, zinc group 14. Mixed task examples 15. Mixed task examples
Format of instruction	☒ lectures ☒ seminars and workshops ☒ exercises ☐ *on line* in entirety ☒ partial e-learning ☐ field work ☐ independent assignments ☐ multimedia ☐ laboratory ☒ work with mentor ☐ (other)
Student responsibilities	

Screening student work *(name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)*						
	Class attendance	2	Research		Practical training	
	Experimental work		Report		(Other)	
	Essay		Seminar essay		(Other)	
	Tests	0.5	Oral exam	1.0	(Other)	
	Written exam	0.5	Project		(Other)	

Grading and evaluating student work in class and at the final exam	All laboratory exercises must be finished successfully. Student who gets a signature from the course Inorganic chemistry can approach the exam. The exam consists of written and oral part of the exam. To reach an oral exam student must pass the written part of the exam. Written part of the exam is evaluated as follows: over 55% - sufficient; more than 70% - good; over 80% - very good; more than 90% - excellent The whole exam or part of it is possible to take a partial tests (3 tests) during the semester. Tests include the lecture materials, seminars and exercises. Written tests are evaluated as follows: more than 55% - sufficient; more than 70% - good; over 80% - very good; over 90% - excellent All three test must be passed. The final grade represents the average grade of all three tests.

Required literature (available in the library and via other media)	**Title**	**Number of copies in the library**	**Availability via other media**
	Inorganic Chemistry 7th Edition, M. Weller, T. Overton, J. Rourke, Oxford University Press (July		

	24, 2018)		
	Taro Saito, Inorganic Chemistry, Create Space Independent Publishing Platform, 2014.		
Optional literature (at the time of submission of study programme proposal)	F. Albert Cotton et al., Basic Inorganic Chemistry, New York, John Wiley and Sons, 1995.		
Quality assurance methods that ensure the acquisition of exit competences	Continuous evaluation by monitoring activities and testing, anonymous survey		
Other (as the proposer wishes to add)			