1. GENERAL INFORMATION

Study programme title	University Undergraduate Study Programme in Geological Engineering		
Course title	Applied chemistry	**Semester**	5th
Teacher	Prof. Frankica Kapor, PhD	**Course code**	
Course type	☐ obligatory ☒ elective	**ECTS**	4
Location	Faculty of Mining, Geology and Petroleum Engineering, Pierottijeva 6, Zagreb		
Language	☐ Croatian ☒ English		

Class type	Weekly hours	Teaching staff	Office hours	Room	E-mail
Class	2	Prof. Frankica Kapor, PhD	By agreement	V 715	fkapor@rgn.hr
Practice	1	Asst. Prof. Gordana Bilić, PhD	By agreement	V 708	gpustaj@rgn.hr
Field lecture	/				

E-learning level	1	**Percentage of on-line class (max. 20%)**	5%

2. COURSE DESCRIPTION

Course aims	Adoption of basic knowledge from the main petrogenetic elements, acquainting their properties with respect to the material and their application. Students will be able to use the acquired knowledge to facilitate and understand the content of other courses during the studies that are being upgraded to this course.
Requirements for applicants	Passed general chemistry exam
Programme level learning outcomes with course contribution	After completing the course students will be able to classify the petrograph elements with respect to the structure and position in the periodic system of the elements and to distinguish the behavior in the various compounds with regard to their properties. Based on the understanding of the chemical and physical properties of petrograde elements, students will be able to predict new possibilities of their application and use.

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Expected course level learning outcomes (4-10 outcomes)	With the knowledge gained students will be able to: - define the main petrogens and mining elements - explain the properties of the elements with respect to the material and position in the periodic system of the elements - explain the methods of obtaining and applying petrograde elements - define and explain the colloidal properties of dispersion systems - classify construction materials according to their content and purpose

Course contents by individual lessons	
Class	Practice
P1 Introduction lecture. Getting acquainted with the major petrogens and minerals. Share seminar topics. P2 Properties of the elements with respect to the material and position in the periodic system. Seminars of students. P3 Iron, chemical properties and forms of appearance. Seminars of students. P4 Iron, obtaining, applying and protecting. Seminars of students. P5 Copper, chemical properties and appearance forms. Seminars of students. P6 Copper, obtaining, application and protection. Seminars of students. P7 Aluminum, chemical properties and appearance forms. Seminars of students. P8 Aluminum, obtaining, application and protection. Seminars of students. P9 Colloidal Dispersion Systems and their Properties. Seminars of students.	V1 Introduction to laboratory exercises (students' obligations, rules of procedure, methods of precaution and protection at work with chemicals, job placement). V2 Qualitative chemical demonstration of elements. V3 Quantitative determination of iron redox titration. V4 Gravimetric determination of iron loss by corrosion. V5 Iodometric determination of copper concentration. V6 Protection of copper by inhibitor. V7 Aluminum properties testing. V8 Electrochemical potential determination. V9 Colloidal properties testing. V10 Tasks related to phase equilibrium. V11 Determination of cement composition. V12 Qualitative proofing of elements.

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P10 Phase Balance. Seminars of students. P11 Building materials, cement. Seminars of students. P12 Compounds with halogen and calcium elements. Seminars of students. P13 Clay, properties. Seminars of students. P14 Nonmetal materials, polymers. Seminars of students. P15 Colloquium from lecture.	V13 Testing and calculation of ion exchange. V14 Numerical tasks. V15 Practice colloquium.

Students' obligations	Students are required to complete all laboratory exercises and have properly completed worksheets, attend 80% of lectures, present seminar papers and pass a final written exam from laboratory exercises. All the above mentioned condition is for access to the final exam from the course.			
Students' work track *(indicate share in ECTS points for each activity so that overall ECTS number corresponds to class credits score):*	Class attendance		Research	
	Project		Report	
	Colloquium	2	Seminar paper	1
	Practical work		Oral exam	1
	Written exam		(Extra)	
Type of exam, grades and evaluation of students work during class and on final exam	Regular presence at the class (80 %), written and defended seminar thesis within personal deadline, passed practice colloquium. Mark is generated from practice colloquium. (50 percent) and oral examination (50 percent). During the oral examination student will answer the whole course content.			
Mandatory literature (available in the Library and via other media)	1. Filipović, I., Lipanović S.:Opća i anorganska kemija II. dio, Školska knjiga , Zagreb, 1995. 2. S. Voyutsky: Colloid chemistry. Mir, Moskva, 1978. 3. Brdička R.: Osnove fizikalne kemije, Školska knjiga,1969. 4 Interne skripte			
Aditional literature (at the moment of study program proposition application)	1. R.Chang, Chemistry, McGraw-Hill, Inc., New York, 1991 2. J.S.Laskowski, J. Ralston: Colloid Chemistry in Mineral Processing**,** Elsevier 1991 3. M. Alper: Phase diagrams, Academic Press, New York, 1970 4. Interna skripta			
Examination terms				
Other				

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