

Faculty of Metallurgy and Technology / CHEMICALL TECHNOLOGY / GENERAL CHEMISTRY

Course:	GENERAL CHEMISTRY			
Course ID	Course status	Semester	ECTS credits	Lessons (Lessons+Exercises+Laboratory)
1071	Mandatory	1	7	3+0+3
Programs	CHEMICALL TECHNOLOGY			
Prerequisites	Without conditioning			
Aims	Through General Chemistry, the student should get to know the basic laws and modern theories in chemistry, as well as get, in a basic scope, an overview of most of the key areas of modern chemistry, so that later can easily get involved in the study of any special branch of chemistry or some other natural science.			
Learning outcomes	At the end of the course, the student will be able to: - Knows basic chemical laws, - Describes chemical changes qualitatively and quantitatively using the stoichiometric approach, - Explain the electronic structure of atoms and the position of elements in the Periodic Table of Elements, - Recognizes the types of bonds in compounds, - Explain the term: solution, types of solutions, electrolytes, acids, bases and salts, - Knows the concept of buffer, hydrolysis and ionic product of water, - Explain the basic terms and concepts of thermochemistry, chemical kinetics and chemical equilibrium, - Knows the rules of behavior in the chemical laboratory.			
Lecturer / Teaching assistant	Prof. dr Zorica Leka MSc Mia Stanković			
Methodology	Lectures, laboratory exercises, tests and colloquiums, independent preparation of homework, consultations.			
Plan and program of work				
Preparing week	Preparation and registration of the semester			
I week lectures	Introduction. Acquaintance of students with classes, homework, colloquiums, final exam. Distribution of information and ECTS.			
I week exercises	Getting to know the chemical laboratory: lab safety rules and guidelines, first aid.			
II week lectures	Atomic and molecular mass. Mole and molar mass. Energy changes during chemical reactions. Hess's law. Gas laws			
II week exercises	Basic laboratory equipment and operations. International System of Units. Mol and mass of substance. (Tasks)			
III week lectures	Electronic structure of atoms. Bohr and Bohr-Sommerfeld model of the atom. Quantum-mechanical model of the atom. Quantum numbers. Basic wave mechanical principles and rules. Atomic orbitals			
III week exercises	Separating the components of the mixture and determining its percentage composition. Tasks, mass fraction(w).			
IV week lectures	Distribution of electrons in quantum levels. Atomic structure and Periodic System of Elements. Test.			
IV week exercises	Determination of the crystal hydrate formula. Determining the simplest and correct formulas of compounds (tasks)			
V week lectures	Chemical bond and molecular structure. Ionic bond. Covalent bond . Metal bond. Intermolecular bonds.			
V week exercises	Basics of chemical calculation based on chemical equations. Chemical equivalent. First homework.			
VI week lectures	Dispersion systems.			
VI week exercises	Solutions			
VII week lectures	Electrolyte solutions. Ionic reactions			
VII week exercises	Electrolyte solutions. Ionic reactions-Tasks. Preparation for the first colloquium. Second homework.			
VIII week lectures	The first colloquium			
VIII week exercises	Electrolyte solutions. Ionic reactions. Practice.			
IX week lectures	Chemical kinetics. Remedial colloquium.			
IX week exercises	Chemical reaction rate.			
X week lectures	Chemical equilibrium. Equilibrium in homogeneous systems.			
X week exercises	Chemical equilibrium. Equilibrium in homogeneous systems.			

XI week lectures	Aqueous salt solution.					
XI week exercises	Hydrolysis.					
XII week lectures	Equilibrium in heterogeneous systems.					
XII week exercises	Equilibrium in heterogeneous systems.Solubility product. Third homework.					
XIII week lectures	Aggregate states.					
XIII week exercises	Preparation for the colloquium.					
XIV week lectures	II colloquium					
XIV week exercises	Compensation for unworked exercises					
XV week lectures	Remedial II colloquium					
XV week exercises	Preparation for the final exam.					
Student workload	weekly 7 credits x 40/30 = 9 hours and 30 minutes Structure: 3 hours of lectures 3 hours of exercises 9 hours and 30 minutes of individual student work (preparation for laboratory exercises, colloquiums, homework) including consultations in the semester Lessons and final exam: (9 hours and 30 minutes) x16= 149 hours and 30 minutes Necessary preparation before the beginning of the semester (administration, registration, certification) 2 x (9 hours and 30 minutes) = 19 hours Total workload for the course 7x30 = 210 hours					
Per week			Per semester			
7 credits x 40/30=9 hours and 20 minuts 3 sat(a) theoretical classes 3 sat(a) practical classes 0 excercises 3 hour(s) i 20 minuts of independent work, including consultations			Classes and final exam: 9 hour(s) i 20 minuts x 16 =149 hour(s) i 20 minuts Necessary preparation before the beginning of the semester (administration, registration, certification): 9 hour(s) i 20 minuts x 2 =18 hour(s) i 40 minuts Total workload for the subject: 7 x 30=210 hour(s) Additional work for exam preparation in the preparing exam period, including taking the remedial exam from 0 to 30 hours (remaining time from the first two items to the total load for the item) 42 hour(s) i 0 minuts Workload structure: 149 hour(s) i 20 minuts (cources), 18 hour(s) i 40 minuts (preparation), 42 hour(s) i 0 minuts (additional work)			
Student obligations			Students are required to attend classes, do and hand in all homework, DO ALL LABORATORY EXERCISES and do both colloquiums			
Consultations			Monday: 12-13; Thursday: 11-12 h			
Literature			(1) M. Dragojević, M. Popović, S. Stević, V. Šćepanović, Opšta hemija, TMF,Beograd, 2003. Knjiga, (2) Filipović, S. Lipanović, Opća i anorganska kemija, Školska knjiga, Zagreb, 1988.Knjiga, (3) Z. Leka, Praktikum opšte hemije sa zadacima , Podgorica , 2010. (4) Milan Sikirica, Stehiometrija, Školska knjiga, Zagreb, 1989., Zbirka zadataka (5)M . Popović, D. Vasović, Lj. Bogunović, D. Poletić, O. Đuković: ZbirkazadatakaizOpštehemije, TMF Beograd, 2003			
Examination methods			Activity during the lecture and control test: (0 - 3 points), • Activity during exercises and submitted reports: (0 - 4 points), • Correctly completed homework: (0 - 3 points), • I colloquium: (0 - 20 points), • II colloquium: (0 - 20 points), • Final exam: (0 - 50 points), A passing grade is obtained if at least 50 points are accumulated cumulatively			
Special remarks						
Comment						
Grade:	F	E	D	C	B	A
Number of points	less than 50 points	greater than or equal to 50 points and less than 60 points	greater than or equal to 60 points and less than 70 points	greater than or equal to 70 points and less than 80 points	greater than or equal to 80 points and less than 90 points	greater than or equal to 90 points