

	SUBJECT:	Chemistry		
	HOURS:	L(15), E(30)	ECTS:	5
	semester	winter	Academic year	2013/2014
Name/title of the author:	Kinga Tataruch, Phd; Piotr Kozera, Msc.			
Course Description:	Lecture and laboratory			
Learning Outcomes (Goals and Objectives of the course):	<p>Based on the lectures and classes the student should:</p> <ul style="list-style-type: none"> - define basic chemical concepts, find correlation between structures of atoms and chemical compounds and their physicochemical properties, write and balance chemical reactions, characterize processes in electrolyte solutions, describe methods of purification, determine the concentration of solutions, predict chemical formulas using elemental analysis. - use proper chemical language. Find and verify information from various sources. Interpret correctly the results of experiment and draw conclusions, - obey safety rules, workplace regulations and acquire team working skills. 			
Entrance qualifications:	At least secondary school level chemistry is required			
Course Content:	<p>Introduction to chemistry. Fundamental chemical laws and concepts. Atomic theory and atomic structures. Electron configuration. Periodic table of the elements. Periodic relationships including, atomic radii, ionization energies, electron affinities, oxidation states. Molecule structures. Elemental analysis. Chemical bonding – relationships to states, structures and properties of matter. Gases, liquids and solids. Inorganic compounds – classification, nomenclature, and their reactions. Chemical reactions: molecular and ionic equations, types of chemical reactions – acid base, precipitation and oxidation – reduction reactions. Stoichiometry: ionic and molecular species present in chemical systems. Balancing of equations, including simple redox reactions. Solutions – types of solutions and factors affecting solubility. Methods of expressing concentration. Preparing of solutions. Processes of purification: crystallization, sublimation, extraction, distillation. Electrolytic dissociation and salt hydrolysis. Quantitative analysis – acid-base and precipitation titrations. Electrochemistry – potentiometric and conductometric titrations. Kinetics – concept of rate reaction. Effect of temperature changes on rates. Energy of activation; the role of catalysts.</p>			
Assessment policy (examination):	<ul style="list-style-type: none"> - written examination, - written progress tests, - continuous assessment (preparation for classes, activities and reports). 			
Course materials/bibliography:	<p>L. Pauling “General Chemistry”, 1988. L. Jones, P. Atkins, “General Chemistry: particles, matter, reactions” S. Douglas, “Fundamental of analytical chemistry”, 8th edition 2004. Additional materials, texts and supporting information will be provided by the instructors.</p>			
Methods of Instruction:	Lecture methods, demonstration methods, practical exercises			
Notes / suggestions:				