

Study Programme: Agricultural engineering and information systems			
Course Unit Title: General chemistry			
Course Unit Code: 19.URV004			
Name of Lecturer(s): Asoc. Prof. Dejan Prvulović, PhD			
Type and Level of Studies: UAS			
Course Status (compulsory/elective): compulsory			
Semester (winter/summer): winter			
Language of instruction: ENG			
Mode of course unit delivery (face-to-face/distance learning): face-to-face			
Number of ECTS Allocated: 6			
Prerequisites: none			
Course Aims: Providing the basis for the formation of a certain view of the world, getting to know the most important principles, theories and laws of chemistry, providing theoretical basis for acquiring other skills, mastering specific skills related to the application of theoretical knowledge, the development of creative skills and practical skills necessary for the exercise of the profession.			
Learning Outcomes: After completing the course of chemistry, students will train the application of theoretical and practical knowledge of chemistry. In terms of practical knowledge and skills students will be able to compute in chemistry, handling basic laboratory equipment, perform basic volumetric determinations and basic instrumental measurements. In addition to this, students should be able to continue their studies or to apply their knowledge and understanding of the profession and to convey it to others.			
Syllabus: <i>Theory</i> Introduction. Basic concepts of chemistry. Chemical formulas and equations. The structure of atoms and the periodic table of elements. The structure of the molecule. Electron theory of chemical bonding. The main types of inorganic compounds. Intermolecular interactions and states. Basics of thermochemistry. Fundamentals of chemical kinetics. Chemical equilibrium. The solutions. Electrolytic dissociation and equilibrium in electrolyte solutions. Acids and bases. Hydrolysis and buffers. Oxidation-reduction processes and redox potential. Colligative properties. Colloids. Structure and classification of organic compounds. Hydrocarbons. Organic compounds containing oxygen and nitrogen. Chemical properties of fuels and lubricants. <i>Practice</i> The stoichiometry. Quantifying the composition of the solution. Electrolytic dissociation and pH. Buffers. Quantitative analysis-Acid-base titration. Permanganometry. Potentiometric titration. Spectrophotometry. Hydrocarbons and for all their reaction. Chemical reactions of individual groups of organic compounds (alcohol, phenol, carbonyl compounds, carboxylic acids and acid derivatives). Total acid number of fuels.			
Required Reading: Gorzynski Smith, J.2010. General, Organic & Biological Chemistry, McGraw-Hill, New York.			
Weekly Contact Hours:	Lectures: 3	Practical work: 2	
Teaching Methods: Lectures face-to-face and laboratory work. Consultations if needed.			
Knowledge Assessment (maximum of 100 points):			
Pre-exam obligations	points	Final exam	points
Preliminary exam(s)	20- 40	oral exam	30-60