Table 5.2 Course specification

Level: Bachelor
Course title: Chemistry I
Status: obligatory
ECTS: 7
Requirements: none
Course aim The aim of the course is to provide the students the basic general knowledge and understanding of the concepts and to apply them in solving problems.
Course outcome Upon successful completion of the course, students should be able to: 1. understand the key concepts in chemistry and apply fundamental laws of chemistry in basic calculations, 2. understands the classification of chemical elements in the Peridic system, write down the electron configuration of any element or ion based on the building principles, 3. identify the different types of chemical bonds and intermolecular forces and explain the physical properties of gaseous, liquid and solids. 4. recognize the the basic types of inorganic compounds, their physical and chemical properties, 5. understand the principles the chemical reactions equilibrium and rate constants, 6. work safely and with chemicals and properly use laboratory equipments.
Course content *Theory* Chemistry: the study of change. Periodic relationships among elements. Electronic structure of the atoms. Chemical bonding (ionic, covalent, metallic). Molecule geometry and hybridization of atomic orbitals. The polarity of the molecules. Intermolecular forces and liquids and solids. General properties of aqueous solutions. Oxidation-reduction reactions. Standard reduction potential. Types of inorganic compounds. Chemical kinetics. The concept of equilibrium and the equilibrium constant. *Practice: Practical classes, OFT, SRW* Heterogeneous and homogeneous types of mixtures in chemistry. Stoichiometric calculations. Inorganic compounds four main types. Redox reactions. Aqueous solutions. Colligative properties of nonelectrolite and electrolyte solytions. The rate of a reaction. Chemical equilibrium. Reactions in aqueous solutions