

**Table 5.2** Course specification

<b>Level:</b> Bachelor
<b>Course title:</b> Chemistry II
<b>Status:</b> obligatory
<b>ECTS:</b> 6
<b>Requirements:</b> none
<b>Course aim</b> The aim of the course is to provide students the application of the on the basic principles of general chemistry to the chemical elements on order to recognize phisical and chemical properties of elements and their compounds.
<b>Course outcome</b> Upon successful completion of the course, students should be able to: <ol style="list-style-type: none"><li>1. apply the principles of chemical equilibrium to aqueous solutions of acids, bases and salts,</li><li>2. understands the properties of chemical elements and their inorganic compounds based on general principles, electronic configuration, size of atoms and types of bond between atoms,</li><li>3. knows the common characteristics of the elements according to their position in the groups of the Periodic Table of the Elements,</li><li>4. formulates accurate conclusions based on experimental results.understand the key concepts in chemistry and apply fundamental laws of chemistry in basic calculations,</li><li>3. understands the classification of chemical elements in the Periodic system, write down the electron configuration of any element or ion based on the building principles,</li><li>4. identify the different types of chemical bonds and intermolecular forces and explain the physical properties of gaseous, liquid and solids.</li><li>5. recognize the the basic types of inorganic compounds, their physical and chemical properties,</li><li>6. understand the principles the chemical reactions equilibrium and rate constants,</li><li>7. work safely and with chemicals and properly use laboratory equipments.</li></ol>
<b>Course content</b> <i>Theory</i> 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.  <i>Practice: Practical classes, OFT, SRW</i> <i>Heterogeneous</i> and <i>homogeneous</i> 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