

STUDY PROGRAMME	CHEMICAL ANALYSIS, 653F18001
SUBJECT TITLE	Physical Chemistry
NUMBER OF CREDITS	6
DURATION OF SUBJECT	Total: 160 hours (88 contact hours, 72 self-study hours)
TEACHING PERIOD	Autumn Semester
SUBJECT CONTENT	<p>Subject objective Provide students with the knowledge of physical phenomena and general laws of chemical processes necessary to manage chemical processes and analyse the properties of solutions. Students get acquainted with chemical kinetics and catalysis, develop the ability to understand electrical and chemical energy transformation, familiarise with the classification and analysis of disperse systems.</p> <p>Learning outcomes Be able to: find and analyse scientific literature independently, summarise and systematise information; conclude a bibliographic list on a specific topic in compliance with the international standards; analyse various situations / cases, make logical conclusions and reason them; solve physical chemistry tasks; prepare and present a presentation on a physical chemistry draw conclusions, argue and discuss; classify substances according to typical characteristics of physical states and apply the basic laws of physical states; describe phenomena occurring in phase transition boundaries, explain the homogeneous and heterogeneous catalysis; explain the electrical conductivity of solutions and electrolysis; classify dispersion systems and recognise them in the surrounding environment; explain properties of macromolecular compounds, gels and processes of the formation and aging of gel-like substances; recognise the basic concepts of chemical thermodynamics, apply the basic law of thermochemistry and its conclusions, provide conditions for the right direction of a chemical process; classify reactions according to various characteristics, express the speed of chemical reactions and explain their mechanism; model chemical energy conversion to electricity, calculate the electrode potential in galvanic cells; analyse phase equilibrium systems applying phase rule equation and use the thermal analysis method to examine alloys; analyse colligative properties of solutions and solutions of solid, liquid and gaseous substances in liquids; produce and examine dispersive systems.</p> <p>Content (topics)</p> <ol style="list-style-type: none"> 1. Physical states of matter 2. Fundamentals of chemical thermodynamics 3. Phase equilibrium and solutions 4. Chemical equilibrium, kinetics and catalysis 5. Electrochemistry 6. Fundamentals of colloid chemistry
ASSESSMENT	Cumulative assessment (intermediate settlements, practical work/laboratory work, self-study, examination)
SUBJECT COORDINATOR	PhD Inga Stankevičienė Vilniaus kolegija/University of Applied Sciences, Faculty of Agrotechnologies, Chemistry Department 2A Beržų str., Buivydiškės, Vilnius district, LT-14160, Lithuania Tel. +370 5 2 19 16 59 E-mail: chemija@atf.viko.lt