

Study programme**Part A) of the study programme *****Learning outcomes**

Faculty offering the field of study:		Faculty of Chemistry
Field of study:		Chemistry
Level of study:		first-cycle studies
Level of the Polish Qualifications Framework:		level 6
Degree profile:		general academic
Professional degree awarded to the graduate:		licencjat
Allocation of the field of study within academic or artistic discipline(s), to which learning outcomes for a given field of study refer:		Discipline: Chemical Sciences (100%) Major discipline: Chemical Sciences
Symbol	Upon completion the graduate achieves the learning outcomes specified below:	
KNOWLEDGE		
K_W01	The graduate has advanced knowledge of principles of chemistry and the nomenclature.	
K_W02	The graduate knows most important chemical elements and their compounds. The graduate knows ways of correlations between elements' properties and their primary chemical compounds, and the place of the element in the periodic table.	
K_W03	The graduate has advanced knowledge of the principles of linear algebra, mathematical analysis and statistics necessary for the description and modelling of chemical phenomena.	
K_W04	The knows the role of experiments and computer simulations in chemical processes	
K_W05	The graduate knows basic software packages for the analysis and development of data	
K_W06	The graduate knows theoretical and practical aspects of performing qualitative and quantitative analysis by means of conventional and instrumental methods as well as equipment operation rules.	
K_W07	The graduate has advanced knowledge of functional groups of organic compounds and reaction mechanisms	
K_W08	The graduate knows states of matter, state equations, theory of chemical kinetics, intermolecular interactions, laws of thermodynamics, phase equilibria, basics of electrochemistry	
K_W09	The graduate is familiar with basic terms, concepts, principles and laws of physics and with their universal character to the extent sufficient to continue education	
K_W10	The graduate knows basic concepts and advanced research methods of contemporary inorganic and coordination chemistry	
K_W11	The graduate knows the basics of biochemistry and chemistry of metabolic processes	
K_W12	The graduate knows techniques of collecting and preparing samples from environmental matrices for analysis, water quality indicators, toxicity tests, and methods of wastewater neutralisation	
K_W13	The graduate has advanced knowledge of aspects of the construction and methods of assessment of properties of materials and chemical substances. The graduate has knowledge enabling them to use materials for a specified practical purpose and to indicate a method of their management after their lifetime.	
K_W14	The graduate knows and understands the basics of quantum chemistry; postulates of quantum mechanics and their application to the description of atoms and molecules. The graduate knows and understands theoretical fundamentals of various molecular spectroscopies.	
K_W15	The graduate has knowledge of technology and chemical engineering	

K_W16	The graduate is aware of occupational health and safety regulations and basic concepts in toxicology. The graduate knows legal regulations pertaining to standards and requirements binding in chemical laboratories as well as legal regulations concerning hazardous substances, their storage and labelling.
SKILLS	
K_U01	The graduate is able to use chemical terminology and concepts in general chemistry
K_U02	The graduate is able to correlate properties of chemical elements and their chemical compounds with their place in the periodic table and to correlate chemical properties of substance with their modern applications
K_U03	The graduate is able to apply the methods of linear algebra and mathematical analysis in selected issues in physics and chemistry
K_U04	The graduate displays the ability to describe and model chemical phenomena and uses selected numerical procedures in chemical calculations
K_U05	The graduate is able to perform basic chemical measurements and is able to develop the results of physicochemical experiments
K_U06	The graduate is able to perform quantitative analyses using gravimetric, volumetric and instrumental methods on the basis of analytical procedures. The graduate is able to prepare an analysis-based report.
K_U07	The graduate is able to recognise functional groups of organic compounds and to perform experiments in organic chemistry
K_U08	The graduate recognises states of matter, and is able to define and describe physicochemical processes
K_U09	The graduate is able to develop simple physical experiments, analyse their results, and explain physical phenomena occurring in the surrounding world. The graduate is able to solve basic problems relying on the laws of physics
K_U10	The graduate is able to synthesise and separate simple inorganic compounds and selected coordination compounds
K_U11	The graduate is able to describe the structure and functions of macromolecular compounds occurring in living organisms and to specify metabolic changes occurring in major metabolic pathways as well as ways of storing and processing chemical energy in the cell
K_U12	The graduate is able to collect and prepare environmental samples and analyse them .
K_U13	The graduate is able to find correlations between material behaviour during formation and use, and physicochemical properties, structure and structural type.
K_U14	The graduate is able to use basic quantum numerical methods to describe, in qualitative terms, properties, structures and reactivity of chemical systems
K_U15	The graduate is able to solve basic problems related to the completion of technological processes
K_U16	The graduate is able to behave properly while facing a variety of emergencies, such as fire or contact with chemical reagents
K_U17	The graduate displays language skills in a modern foreign language at the intermediate level (B2 level) in daily life, in education-related situations and while preparing their diploma thesis
SOCIAL COMPETENCES	
K_K01	Analytical thinking: The graduate is able to work on his/her own and effectively with large amounts of data, to perceive interrelations between phenomena and draw correct conclusions using the principles of logic.
K_K02	Creativity: The graduate thinks creatively in order to improve existing solutions or develop new ones.
K_K03	Conscientiousness and accuracy: The graduate strives to complete a task as effectively as possible. The graduate is sensitive to details and is systematic
K_K04	Communication skills: The graduate is able to communicate the achievements of chemical knowledge to other persons effectively and clearly. The graduate adjusts the level and form of presentations to the needs and capabilities of receivers.
K_K05	Pursuit of development: The graduate is focused on the constant acquisition of new knowledge, skills and experience. The graduate acknowledges the need for constant self-improvement and increasing his/her professional skills. The graduate is aware of the limitations of their knowledge and understands the need for further education.

K_K06	Perseverance and consistency: The graduate works systematically and has a positive attitude to obstacles standing in the way of reaching the desired objectives. The graduate observes deadlines. The graduate understands the need to be systematic in all projects undertaken
K_K07	Autonomy: The graduate implements agreed objectives on his/her own, taking autonomous and sometimes difficult decisions. The graduate is able to find information in the field literature.
K_K08	Professionalism and ethics: The graduate knows and abides by the standards binding for chemists, including ethical standards. The graduate understands the social role of the profession. The graduate understands and recognises the importance of intellectual honesty and integrity, care of one's health and of the natural environment in activities undertaken by themselves and by other persons.
K_K09	Team work: The graduate is able to establish and maintain long-term and effective collaboration with other persons. The graduate endeavours to achieve the objectives of the team by proper planning and organisation of their own work and the work of other persons. The graduate motivates collaborators to increase their efforts in order to achieve the assumed objectives