S t u d y p r o g r a m m e

Part A) of the study programme *

L e a r n i n g o u t c o m e s

Faculty offering the field of study:	**Faculty of Chemistry**
Field of study:	**chemistry**
Level of study:	**first cycle**
Level of the Polish Qualifications Framework:	**Level 6**
Degree profile:	**general academic**
Professional degree awarded to the graduate:	**master of science (MSc)**
Allocation of the field of study within academic or artistic discipline(s), to which learning outcomes for a given field of study refer:	**Discipline: CHEMISTRY SCIENCE (100%)** **Major discipline: CHEMISTRY SCIENCE**
(1) Symbol	**(2) Upon completion the graduate achieves the learning outcomes specified below:**
KNOWLEDGE	
K_W01	The student knows the law and chemical terminology to an advanced degree
K_W02	The student knows the most important elements and their relationships; methods of correlating the properties of elements and their basic chemical compounds with the location of the element in the periodic table
K_W03	The student knows the advanced principles of linear algebra, mathematical analysis and statistics necessary for the description and modeling of chemical phenomenaThe graduate has in-depth knowledge of a selected branch of chemistry
K_W04	The student knows the role of experiment and computer simulations in chemical processes
K_W05	The student knows the basic packages of application software for the analysis and development of data
K_W06	The student knows the theoretical and practical aspects of the implementation of qualitative and quantitative analysis of classical and instrumental methods and the principles of operation of the apparatus
K_W07	The student has advanced knowledge about functional groups of organic compounds and reaction mechanisms
K_W08	The student knows states of matter, state equations, theory of chemical kinetics, intermolecular interactions, principles of thermodynamics, phase equilibria, basics of electrochemistry
K_W09	The student has knowledge of basic terms, concepts, principles and laws of physics and their universal character to the extent sufficient for further education
K_W10	The student knows the basic concepts and advanced research methods of contemporary inorganic and coordination chemistry
K_W11	The student knows the basics of biochemistry and chemistry of metabolic processes
K_W12	The student knows techniques of sampling and preparation of samples from environmental matrices for analysis, water quality indicators, toxicity tests, methods of wastewater neutralization

K_W13	The student knows advanced aspects of construction and methods for assessing the properties of materials and chemical substances. Has knowledge that allows the use of materials for a specific practical purpose and indicate the method of their management after the period of use
K_W14	The student knows and understands the basics of quantum chemistry; postulates of quantum mechanics and their application to the description of atoms and molecules; knows and understands the theoretical basis of various molecular spectroscopy.
K_W15	The student has knowledge in the field of technology and chemical engineering
K_W16	The student knows the rules and principles in the field of occupational health and safety, basic concepts in the field of toxicology; legal acts concerning standards and requirements of chemical laboratories as well as legal regulations concerning dangerous substances and their storage and labeling
SKILLS	
K_U01	The student is able to use chemical terminology and concepts in general chemistry
K_U02	The student is able to correlate the properties of elements and their chemical compounds with the position in the periodic table and link the chemical properties of the substance with their modern applications
K_U03	The student is able to apply methods of linear algebra and mathematical analysis in selected physics and chemistry problems
K_U04	The student is able to describe and model chemical phenomena and applies selected numerical procedures in chemical calculations
K_U05	The student is able to perform basic chemical measurements and is able to develop the results of physicochemical experiments
K_U06	The student is able to perform quantitative analyzes using weight, titration and instrumental methods on the basis of analytical procedures and prepare analysis reports
K_U07	The student recognizes the functional groups of organic compounds and conducts experiments in the field of organic chemistry
K_U08	The student distinguishes the states of matter, define and describe physicochemical processes
K_U09	The student is able to design simple physical experiments, analyze their results, and explain physical phenomena occurring in the surrounding world and solve basic problems based on the laws of physics
K_U10	The student is able to synthesize and separate simple inorganic compounds and selected coordination compounds
K_U11	The student is able to determine the structure and functions of macromolecular compounds found in living organisms and characterize metabolic changes occurring in the basic metabolic pathways, as well as methods for storage and processing of chemical energy in the cell
K_U12	The student is able to collect and prepare environmental samples and conduct their analysis
K_U13	The student knows how to find relations between the behavior of materials during formation and use, and physicochemical properties, structure and type of structure
K_U14	The student is able to use basic quantum numerical methods to qualitatively describe the properties, structure and reactivity of chemical systems
K_U15	The student is able to solve problems related to the implementation of technological processes
K_U16	The student can properly behave in the event of various types of threats, for example: fire, contact with chemical reagents
K_U17	The student is able to use a modern foreign language at intermediate level (B2) in life, while studying and preparing a diploma thesis
SOCIAL COMPETENCES	
K_K01	Analytical thinking: The student is able to work with a large amount of information independently and effectively, notices the dependencies between phenomena and correctly draws conclusions using logic principles

K_K02	Creativity: The student thinks creatively in order to improve existing or create new solutions
K_K03	Conscientiousness and accuracy: The student is focused on the best performance of the task; cares about the detail; is systematic
K_K04	Communicativeness: The student effectively communicates the achievements of chemical knowledge in an understandable way; adjusts the level and form of the presentation to the needs and capabilities of the recipient
K_K05	Striving for development: The student is focused on constantly acquiring new knowledge, skills and experiences; sees the need for continuous improvement and improvement of professional competences; knows the limits of own knowledge and understands the need for further education
K_K06	Perseverance and consistency: The student works systematically and has a positive attitude towards the difficulties that stand in the way of achieving the assumed goal; he keeps deadlines; understands the need for systematic work on any projects
K_K07	Independence: The student fully implements the agreed goals independently, making independent and sometimes difficult decisions; can independently search for information in professional literature
K_K08	Professionalism and ethics: The student knows and adheres to the rules and standards of the chemist, including ethical standards; understands the social role of the profession; understands and appreciates the importance of intellectual honesty, care for health and the environment in the actions of their own and other people
K_K09	Team work: The student establishes and maintains long-lasting and effective cooperation with others; strives to achieve the goals of the team through appropriate planning and organization of their and others' work; motivates co-workers to increase their efforts to achieve their goals

* The study programme – Part A) – learning outcomes (with information under the table referring to the date of its adoption by the Faculty Board and the academic year it is to be effective from) must be signed by the Dean of the Faculty (1)

Explanatory notes:

K (before the underscore) – learning outcomes for the field of study

W – knowledge;

U – skills;

K (after the underscore) – social competences.

(2) The description of expected learning outcomes for studies conducted in a given field of study, level and profile in terms of knowledge, skills and social competen

This study programme-learning outcomes is effective as of winter semester of the academic year 2019/2020.

This study programme-learning outcomes was adopted by the Board of the Faculty of Chemistry on 13th march 2019.

/-/ Prof. dr hab. Edward Szłyk

(Dean's signature)