

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

Faculty offering the field of study:		Faculty of Chemistry
Field of study:		Chemistry and Food Technology
Level of study:		First-cycle studies
Level of the Polish Qualification Framework:		Level 6
Profile:		General academic
Professional degree awarded to the graduate:		Inżynier
Allocation of the field of study within academic or artistic discipline(s), to which learning outcomes for a given field of study refer::		Disciplines: Chemical Sciences (100 %) Major discipline: Chemical Sciences
Symbol	Upon completion the graduate achieves the learning outcomes specified below:	
KNOWLEDGE		
K_W01	The graduate knows basic principles of chemistry and the nomenclature valid in chemistry, elements and their compounds as well as research methods of contemporary inorganic chemistry.	
K_W02	The graduate knows the basics of linear algebra, mathematical analysis and statistics necessary for the description and modelling of chemical and technical phenomena.	
K_W03	The graduate knows the role of experiments and computer simulations in chemical and technological processes.	
K_W04	The graduate knows basic software packages for the data analysis and elaboration.	
K_W05	The graduate is familiar with basic terms, concepts, rules and laws of physics and their universal character to the extent sufficient to continue education.	
K_W06	The graduate knows theoretical and practical aspects of performing quantitative and qualitative analysis by means of conventional and instrumental methods as well as equipment operation rules.	
K_W07	The graduate has basic knowledge of functional groups of organic compounds and reaction mechanisms.	
K_W08	The graduate knows states of matter, theory of chemical kinetics, laws of thermodynamics, basics of electrochemistry, laws of heat and mass exchange in food processing.	
K_W09	The graduate is familiar with cell biology, properties of pathogens and microorganisms, their origin and conditions conducive to their growth as well as methods of their inactivation.	
K_W10	The graduate knows the basics of biochemistry, biochemical role of carbohydrates, fats, proteins, minerals and vitamins, and the possibilities of using enzymes in food production.	
K_W11	The graduate has knowledge of basic issues in technology and chemical engineering.	
K_W12	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.	
K_W13	The graduate knows basic techniques of food sensory analysis.	
K_W14	The graduate has knowledge of ecology and environment protection as well as sewage and waste management.	

K_W15	The graduate knows basic food ingredients, functional food additives, contaminations and toxic substances in food and methods of their identification by means of conventional and instrumental techniques.
K_W16	The graduate knows types of single technological processes and their impact on the behaviour of nutrients in the processed products.
K_W17	The graduate knows basic rules pertaining to fats, starch and sugar technologies and the confectionery industry as well as practices applied for developing new food products.
K_W18	The graduate knows the characteristics and properties of packaging of food products.
K_W19	The graduate knows basics of hygiene rules for food production, disinfection of equipment and production premises.
K_W20	The graduate knows legal, economic and social grounds as well as the organisation and basics of managing a small enterprise.
K_W21	The graduate knows the construction and operation of machines and equipment used in food technology as well as the rules of engineering graphics.
K_W22	The graduate knows and understands basic concepts and regulations pertaining to industrial property protection, patent protection and copyright law protection, and is able to use patent information resources.
K_W23	The graduate knows the rules of food quality management pursuant to standards and regulations of domestic and European law.
K_W24	The graduate knows rules and regulations pertaining to occupational health and safety as well as work organisation in a food processing facility.
K_W25	The graduate knows basic activities related to food production as well as quality control and production accounting of food products.
SKILLS	
K_U01	The graduate is able to use the nomenclature of chemistry and concepts in organic and inorganic chemistry. The graduate is able to correlate properties of chemical elements and their chemical compounds with their contemporary use.
K_U02	The graduate is able to apply the methods of linear algebra and mathematical analysis in selected issues in physics, chemistry and engineering.
K_U03	The graduate displays the ability to describe and model chemical phenomena and uses selected numerical processes in chemical, statistical and engineering computations.
K_U04	The graduate is able to use IT in computer graphics.
K_U05	The graduate is able to perform basic measurements of chemical and physical quantities and is able to elaborate results of physico-chemical experiments.
K_U06	The graduate is able to perform quantitative analyses using conventional 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 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_U09	The graduate is able to describe the structure, biochemical functions and possibilities of use of macromolecular compounds in food processing.
K_U10	The graduate is able to perform tasks in food analysis and assesses sensory properties of food products.
K_U11	The graduate is able to identify and specify the number of typical microorganisms that cause food spoilage as well as pathogens and their toxins.
K_U12	The graduate is able to suggest and perform simple individual processes and operations in food technology as well as to correctly interpret results and draw conclusions.
K_U13	The graduate is able to solve basic problems and indicate critical points related to the completion of technological processes.
K_U14	The graduate is able to prepare and analyse material and energy balance of food processing as well as technical reports and memos.

K_U15	The graduate is able to operate and use control and measuring equipment used in industrial processes.
K_U16	The graduate is able to present an engineering practical task related to: production of a new food product, modification of technological processes, effective operation of food processing plants, marketing and product quality management.
K_U17	The graduate is able to use specialist terminology in the professional environment in food processing and food chemistry. The graduate is able to prepare presentations in oral, verbal and graphic forms in Polish and in a foreign language.
K_U18	The graduate is able to act properly while facing a variety of emergencies, such as fire or contact with chemical reagents. The graduate observes occupational health and safety regulations and good practices in chemical laboratories and industrial plants.
K_U19	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 paper.
K_U20	The graduate is able to perform a business analysis of undertaken engineering activities applying the rules of accounting and documentation of implemented processes.
K_U21	The graduate is able to plan and execute a test production of a food product, i.e., to suggest formulae for a specified amount of a food product, develop a flow diagram, specify parameters of particular production stages and complete production in compliance with the prepared plan.
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 and ethics.
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 and engineering knowledge, related to food production, 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. The graduate is able to think and act in an entrepreneurial manner.
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. The graduate knows the profession through completing practical internships in an industrial plant and fieldwork.
K_K08	Professionalism and ethics: The graduate knows and abides by the standards binding for chemists and food technologists, 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 production of high quality food, 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 his/her own work and the work of other persons. The graduate motivates collaborators to increase their efforts in order to achieve the assumed objectives. The graduate is aware of the responsibility for jointly accomplished tasks related to team work.