Resolution No. 462/XXVI/XV/2019 of the Senate of Bialystok University of Technology of June 27, 2019 on determining learning outcomes for the second cycle courses starting from the academic year 2019/2020 in the field of Civil Engineering at Bialystok University of Technology

Tabela 6.1. Tabela odniesień efektów kierunkowych dla studiów **drugiego stopnia** na kierunku ***budownictwo*** do kwalifikacji uzyskiwanych na poziomie 7 zgodnie z charakterystykami pierwszego i drugiego stopnia PRK

Symbol of learning outcomes for the field of study (K_B2)	Learning outcomes for the field of study **Civil Engineering**	Reference to universal characteristics of the first cycle **określonych w Ustawie z dnia 22 grudnia 2015 r. o Zintegrowanym Systemie Kwalifikacji oraz charakterystyk drugiego stopnia określonych w przepisach wydanych na podstawie art. 7 ust. 3 tej ustawy PRK – poziom 7**	Reference to engineering competences included in the characteristics of the second cycle **określonych w przepisach wydanych na podstawie art. 7 ust. 3 ustawy z dnia 22 grudnia 2015 r. o Zintegrowanym Systemie Kwalifikacji PRK – poziom 7**
KNOWLEDGE Graduates know and understand:			
K_B2_W01	- selected areas in more detail of mathematics , physics, chemistry and other basic sciences allowing to explain complex issues within the areas of theory of structures and advanced technology of construction materials	**P7U_W P7S_WG**	**P7S_WG**
K_B2_W02	in-depth and extended degree the principles of analysis, dimensioning and constructing of elements of complex building structures : metal, reinforced concrete, prestressed, composite, wooden and masonry structures	**P7U_W P7S_WG**	**P7S_WG**
K_B2_W03	in-depthand extended degree the principles of analysing, designing and constructing selected buildings, industrial, road transport infrastructure and bridge structures, as well as specialised foundation engineering	**P7U_W P7S_WG**	**P7S_WG**
K_B2_W04	basics of continuum mechanics. Have theoretically founded knowledge of advanced issues of strength of materials, modelling of materials and structures, theoretical foundations of numerical methods and general principles of linear	**P7U_W P7S_WG**	**P7S_WG**

	and non-linear calculations of structures in the ultimate limit states		
K_B2_W05	have extended knowledge of currently used products and building elements, methods of their testing and know the principles of manufacturing these products and elements	**P7U_W P7S_WG**	**P7S_WG**
K_B2_W06	the scope of application of computational and information technology methods supporting the analysing, designing , managing and organising construction process. Know the methods, techniques, tools used to solve complex engineering tasks	**P7U_W P7S_WG**	**P7S_WG**
K_B2_W07	in-depth and extended degree, standard principles and regulations and guidelines for the designing of civil engineering structures and their elements	**P7U_W P7S_WG**	**P7S_WG**
K_B2_W08	the principles for creating quality management procedures for construction projects . Have knowledge of conducting business activity in the construction industry. Understand the principles and the fundamentals of financial management of business	**P7U_W P7S_WG**	**P7S_WG**
K_B2_W09	the work standards and regulations applying to civil engineering as well as the technologies, organisation and principles of managing construction process and know the rules of BiOZ	**P7U_W P7S_WG**	**P7S_WG**
K_B2_W10	BIM (Building Information Modelling) issues	**P7U_W P7S_WG**	**P7S_WG**
K_B2_W11	the knowledge of the life cycle of a civil engineering structure, and knowledge of sustainability of engineering structures, their exploitation, maintenance and modernisation	**P7U_W P7S_WG**	**P7S_WG**
K_B2_W12	main development trends in the field of civil engineering and transport and the most important achievements within the field of construction	**P7U_W P7S_WK**	**P7S_WK**
K_B2_W13	economical, legal and ethical determinants of engineering activities. Have knowledge in the field of intellectual property protection law, including patent and copyright law	**P7U_W P7S_WK**	**P7S_WK**
SKILLS: graduates can			
K_B2_U01	use knowledge from various fields of science to formulate and solve complex and unsual tasks and problems and perform	**P7U_U P7S_UW**	**P7S_UW**

	tasks in an innovative way in conditions that are not fully predictable		
K_B2_U02	make a critical analysis of the functioning existing technical solutions in construction, evaluate these solutions, creatively interpret and present them	**P7U_U P7S_UW**	**P7S_UW**
K_B2_U03	communicate in a foreign language at least at B2 level according to the Common European Framework, using specialised terminology within the field of civil engineering	**P7U_U P7S_UK**	
K_B2_U04	design complex structure elements in buildin transport, bridge and industrial structures (metal, reinforced concrete, prestressed, composite, wooden, masonry)	**P7U_U P7S_UW**	**P7S_UW**
K_B2_U05	appropriately define the computational mod and conduct an advanced linear analyses of complex civil engineering structures , graduates can also use nonlinear computational techniques	**P7U_U P7S_UW**	**P7S_UW**
K_B2_U06	appropriately select and evaluate the usefulness of methods and tools for solving problems of modelling, analysing and designing of civil engineering structures, technology and organising of construction works, and using advanced computer programmes supporting modelling and designing processes in civil engineering; can adapt existing or develop new methods and tools	**P7U_U P7S_UW**	**P7S_UW**
K_B2_U07	develop work standards and regulations for a specific company as well as quality management procedures and prepare project schedules for the implementation of construction projects and a cost statement. Graduates can evaluate dangers in the implementation of construction projects and apply the right occupational safety and health protection principles	**P7U_U P7S_UW**	**P7S_UW**
K_B2_U08	plan, conduct and critically interpret the results of experiments	**P7U_U P7S_UW**	**P7S_UW**
K_B2_U09	formulate and test hypotheses related to simp research problems leading to solving problems in civil engineering in accordance with scientific principles	**P7U_U P7S_UW**	**P7S_UW**
K_B2_U10	develop detailed documentation of the results of the implementation of an experiment, design or research task in the field of civil engineering; graduates can also critically overview these results	**P7U_U P7S_UW**	**P7S_UW**

K_B2_U11	can evaluate the relevance and the possibility of using new achievements, techniques and technologies for solving engineering problems within the field of civil engineering, acquire and use BIM documentation of the building and make 3D + models in this technology	**P7U_U P7S_UW**	**P7S_UW**
K_B2_U12	perceive their systemic and non-technical aspects, including ethical aspects, when identifying , formulating and solving engineering tasks	**P7U_U P7S_UW**	**P7S_UW**
K_B2_U13	independently plan of their further education and implement the self-education process, direct others in this area	**P7U_U P7S_UU**	
K_B2_U14	manage the work of the team, cooperate in teamwork and take a leading role in them	**P7U_U P7S_UO**	
K_B2_U15	communicate using specialised terminology with a diverse audience, take part and conduct a debate - present opinions and positions and discuss them	**P7U_U P7S_UK**	
SOCIAL COMPETENCE: graduates are ready to			
K_B2_K01	critical evaluation of knowledge and content received in the field of engineering and te-;-hnical sciences used in solving cognitive and practical problems	**P7U_K P7S_KK**	
K_B2_K02	recognise the importance of professional knowledge in solving problems in the ficld f civil engineering and consulting experts in the event of difficulties with solving the problem on their own	**P7U_K P7S_KK**	
K_B2_K03	conduct activities in an entrepreneurial way	**P7U_K P7S_KO**	
K_B2_K04	implementing initiati ves for the social environment	**P7U_K P7S_KO**	
K_B2_K05	following the rules of professional ethics and acting to comply with these rules and concerning for the achievements and development of the profession	**P7U_K P7S_KR**	
K_B2_K06	responsibl e fulfillment of professional duties and continuous training in areas related to the nature of the performed professional roles	**P7U_K P7S_KR**	

Explanations:
K_B2 - learning outcomes at second-cycle studies in the field of Civil Engineering W - category of knowledge
U - category of skills
K - category of social competences

01, 02, 03 ... - number oflearning outcome

Explanations of symbols according to the Polish Qualifications Framework (Regulation of the Ministry of Science and Higher Education of November 14, 2018, Journal of Laws, item 2218): P = PRK level
U = universal characteristics

P7U_W - level 7 PRK, w1iversal characteristics , knowledge
P7U_U - level 7 PRK, universal characteristics, skills
P7U_K - level 7 PRK, universal characteristics, social competences
P7S - learning outcomes for second-cycle studies according to the Polish Qualifications Framework - qualifications obtained under the system of higher education and science (second cycle characteristics)
- LEVEL 7, general academic profile;
W - knowledge (graduates know and understand): P7S_WG - scope and depth / completeness of the cognitive perspective and dependencies, P7S_WK - context *I* conditions, effects;
U - skills (graduates can): P7S_UW - use of knowledge/ problems solved and tasks performed; P7S_UK - communicating / receiving and creating statements, disseminating knowledge in the professional society and using a foreign language; P7S_UO - work organisation / planning and teamwork ; P7S_UU - learning / planning own professional development and the development of others;
K - social competences (graduates are ready for): P7S_KK - assessment / critical approach, P7S_KO - responsibility / fulfillment of social obligations and acting for the public interest, P7S_KR - professional role / independence and ethos development.

Kierunek *budownictwo* drugiego stopnia przypisany jest do jednej dyscypliny naukowej – *inżynieria lądowa i transport*. Jest to dyscyplina wiodąca
Wszystkie efekty uczenia się zostały przypisane do dyscypliny *inżynieria lądowa i transport.*