COURSE DESCRIPTION CARD

<table>
<tr><td colspan="10">Białystok University of Technology</td></tr>
<tr><td>Field of study</td><td colspan="6">Civil Engineering</td><td>Degree level and programme type</td><td>Master's degree</td></tr>
<tr><td>Specialization/ diploma path</td><td colspan="6">-</td><td>Study profile</td><td>Academic profile</td></tr>
<tr><td rowspan="2">Course name</td><td colspan="6" rowspan="2">Monolithic construction</td><td>Course code</td><td>B2S11002</td></tr>
<tr><td>Course type</td><td>obligatory</td></tr>
<tr><td rowspan="2">Forms and number of hours of tuition</td><td>L</td><td>C</td><td>LC</td><td>P</td><td>SW</td><td>FW</td><td>S</td><td>Semester</td><td>summer</td></tr>
<tr><td>15</td><td></td><td></td><td>15</td><td></td><td></td><td></td><td>No. of ECTS credits</td><td>2</td></tr>
<tr><td>Entry requirements</td><td colspan="9">Construction works part I, Concrete technology</td></tr>
<tr><td>Course objectives</td><td colspan="9">Developing the ability to understand the processes occurring in monolithic works and changes occurring in the concrete mixture. Strengthening and expanding knowledge on the principles of selection of methods, machines and devices for the correct implementation of monolithic works in the aspect of concrete durability. Developing competence in the design and supervision of the correct implementation of the monolithic works process.</td></tr>
<tr><td>Course content</td><td colspan="9">Lecture: The process of monolithic works - simple and auxiliary processes. Formwork - classification, requirements, errors in the selection of formwork. Special formwork, e.g. tunnel, lost, ACS. Preparation of the concrete mix - concrete mixing plants (division and characteristics). Modern mobile concrete plants. Far and near concrete mix transport. Conditions for laying concrete. Pressure of the concrete mix for formwork. Concrete compaction. Special concreting methods (spraying, underwater concreting, two-stage). Concrete care in winter and summer conditions. Concreting of massive structures and diaphragm walls. Nanotechnology in concrete. Concrete mix recycling.
Project - a project for comparative analysis of variant solutions of monolithic slab formwork.</td></tr>
<tr><td>Teaching methods</td><td colspan="9">lecture - written exam, project - completion, discussion of the project</td></tr>
<tr><td>Assessment method</td><td colspan="9">Lecture - written exam, project - project implementation, project defense</td></tr>
<tr><td>Symbol of learning outcome</td><td colspan="7">Learning outcomes</td><td colspan="2">Reference to the learning outcomes for the field of study</td></tr>
<tr><td>LO1</td><td colspan="7">Knows and understands in depth selected issues in the field of monolithic works technology</td><td colspan="2">K_B2_W01</td></tr>
<tr><td>LO2</td><td colspan="7">Knows and understands the principles of analysis and design of simple processes in a complex process of monolithic works. Selects machines and devices for individual processes. Can make a critical analysis of existing solutions and evaluate these solutions.</td><td colspan="2">K_B2_W03
K_B2_W05
K_B2_U02</td></tr>
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LO3	In an extended scope knows the standard rules and guidelines for the design of processes in monolithic robots in terms of concrete durability. He knows the safety rules	K_B2_W07 K_B2_W09 K_B2_W11
LO4	Knows the main development trends in monolithic construction. Knows modern technologies and devices necessary for the implementation of monolithic construction	K_B2_W12
LO5	Is able to assess threats in the implementation of a complex process of monolithic works and implement appropriate principles of safety and health protection.	K_B2_W09 K_B2_U07
LO6	Is ready to recognize the importance of knowledge in solving problems in the field of monolithic construction and the responsible fulfillment of professional duties and continuous training.	K_B2_K02 K_B2_K06
Symbol of learning outcome	**Methods of assessing the learning outcomes**	**Type of tuition during which the outcome is assessed**
LO1	Completing the lecture	L
LO2	Completing the lecture, defending the project	L, P
LO3	Completing the lecture, defending the project	L, P
LO4	Completing the lecture, defending the project	L, P
LO5	Completing the lecture, defending the project	L, P
LO6	Completing the lecture, defending the project	L, P
Student workload (in hours)		**No. of hours**
Calculation	participation in lectures	15
	participation in design exercises	15
	preparation for design exercises and project implementation	5
	preparation for project defense	5
	preparation for passing the lecture and presence on it (8h + 2h passing the lecture)	5
	participation in consultations	5
	TOTAL:	**50**
Quantitative indicators		**HOURS** / **No. of ECTS credits**
Student workload – activities that require direct teacher participation		35 / 1,4
Student workload – practical activities		30 / 1,2
Basic references	1. Neville, A.M. Concrete technology, Harlow: Prentice Hall, 2010. 2. Kurdowski W. Cement and Concrete Chemistry, Springer, 2014 3. Advanced Concrete Technology 3, Edited by Newman J., London, UK, 2003 4. Day K.W, Aldred J., Hudson B. Concrete Mix Design, Quality Control and Specification, Fourth Edition, CRC Press, 2013	
Supplementary references	Articles, papers, websites, catalogues of modern formwork	

Organisational unit conducting the course	Department of Civil and Road Engineering	**Date of issuing the programme**
Author of the programme	Edyta Pawluczuk, PhD, Eng.	March 3, 2020

L – lecture, C – classes, LC – laboratory classes, P – project, SW – specialization workshop, FW - field work, S – seminar