Annex No. 9
to the Rector's Decision No. 35/19
as amended by Decision No. 12/22

COURSE SPECIFICATION

Course code	full-time:	**B1-7-KB-706**
	part-time:	**BN1-7-KB-709**
Course title in Polish	**Podstawy budownictwa przemysłowego**	
Course title in English	**Principles of Industrial Construction**	
Valid from academic year	**2023/2024**	

CURRICULAR ALIGNMENT

Programme	**CIVIL ENGINEERING**
Level	**first-cycle**
Programme profile	**academic**
Mode of attendance	**full-time; part-time**
Specialism	**Structural Engineering**
Academic unit responsible for the course	**Department of Strength of Materials and Building Structures**
Course coordinator	**Dr inż. Artur Wójcicki**
Approved by	**prof. dr hab. inż. Grzegorz Świt**

COURSE DESCRIPTION

Teaching block		**specialism specific**
Course status		**required**
Language of instruction		**Polish**
Semester of delivery	full-time	**semester VII**
	part-time	**semester VII**
Prerequisites		**Dynamics and stability of structures, Concrete Structures 1 and 2, Metal Structures 1 and 2**
Exam (YES/NO)		**NO**
ECTS		**3**

Mode of teaching		**lecture**	**class**	**lab**	**project**	**other**
Number of hours per semester	full-time:	**30**			**15**	
	part-time:	**20**			**10**	

LEARNING OUTCOMES

Category	Code	Learning outcomes	Corresponding programme outcome code
Knowledge	W01	Students know the basic factors determining the design of the most common industrial facilities.	B1_W09 B1_W10
	W02	Students demonstrate basic understanding of the specifics of the most common special facilities.	B1_W09 B1_W10
	W03	Students know the basic scope and specifics of special issues related to the mode of loading and operation of the most common industrial facilities.	B1_W19 B1_W20
	W04	Students know the basic principles of construction of the main load-bearing systems of selected most common industrial objects (monolithic and precast).	B1_W06 B1_W09 B1_W10
Skills	U01	Students are able to identify and consider basic technological factors in the design of selected industrial facilities.	B1_U1 B1_U22
	U02	Students are able to determine the range and values of basic static and dynamic loads acting on selected industrial facilities.	B1_U12 B1_U22
	U03	Students are able to determine and consider interactions other than gravitational and static (e.g.: temperature, temperature differential, excitation forces) occurring during the operation of selected special industrial facilities.	B1_U12 B1_U22
	U04	Students are able to correctly determine the local and global geometry of the load-bearing system elements of the selected industrial structures.	B1_U01 B1_U06 B1_U12 B1_U22
Competence	K01	Students are able to work independently, organize work and the task completion sequence.	B1_K01
	K02	Students are responsible for the reliability of the test results obtained.	B1_K02 B1_K03 B1_K07
	K03	Students can formulate conclusions and appropriately apply the results of calculations and analyses.	B1_K04 B1_K07

COURSE CONTENT

Teaching mode*	Topics covered
lecture	Introductory information: historical determinants; the most common types of industrial facilities. General issues, assumptions determining the choice of technology for the construction of industrial facilities.
	Technological processes determining the design of industrial facilities: - design phases. - development of design assumptions, - location selection, - structural solutions in special facilities; associated components.
	Systems in industrial construction: - typification and prefabrication in industrial construction, - industrial hall systems used.
	Industrial floors- shaping and construction.
	Industrial chimneys-functions and division of industrial chimneys.
	Factors affecting the design of industrial chimneys.
	Scope and specifics of static calculations and construction of industrial chimney shaft.
	Specifics of the construction of chimney foundation.
	Foundations for machinery - division and requirements.

	Classification of industrial machinery.
	Excitation forces acting on foundations for machinery - magnitude and types.
	Models of the soil types used for dynamic calculations of foundations for industrial machinery.
	Installation of industrial machinery.
project	Determining the assumptions for shaping the reinforced concrete industrial chimney envelope.
	Preliminary determination of the structural layers of the chimney shell and support elements. Division into segments.
	Determination of the geometry of the liner support bracket, headliner and inlet field; the geometry of the connection to the flue.
	Verification of the temperature distribution for summer and winter operating impacts. Determination of the final thickness of the thermal insulation layer.
	Dimensioning of reinforcement from thermal effects.
	Constructing the reinforcement of intermediate and headliner support brackets.
	Determining the minimum amount of perimeter reinforcement needed and its layout.

METHODS OF LEARNING OUTCOMES VERIFICATION

Learning outcome	Verification methods					
	Oral exam	Written exam	Test	Project	Report	Other
W01			X	X		
W02			X	X		
W03			X	X		
W04			X	X		
U01			X	X		
U02			X	X		
U03			X	X		
U04			X	X		
K01				X		
K02				X		
K03				X		

ASSESSMENT

Teaching mode*	Assessment type	Criteria
lecture	mark-based	*Obtaining at least 50% of points on the in-class written test.*
project	mark-based	*Correct preparation and successful defense.*

STUDENT WORKLOAD

ECTS weighting													
	Activities	Student workload											
		full-time					part-time						
1.	Scheduled contact hours	W	C	L	P	S	W	C	L	P	S	h	
		30			15		20			10			
2.	Other (office hours, exams)	2			2		2			2		h	
3.	**Total number of contact hours**	**49**					**34**					h	
4.	**Number of ECTS credits for contact hours**	**2**					**1,4**					ECTS	
5.	**Independent study hours**	**17**					**27**					h	
6.	**Number of ECTS credits for independent study**	**0,7**					**1,1**					ECTS	
7.	**Practical hours**	**9**					**14**					h	
8.	**Number of ECTS credits for practical hours**	**0,4**					**0,6**					ECTS	
9.	**Total workload**	**75**					**75**					h	
10.	**ECTS credits for the course** *1 ECTS credit =25 student learning hours*	**3**											

READING LIST

1. Pędziwiatr J.: Wstęp do projektowania konstrukcji żelbetowych wg PN-EN 1992-1-1:2008. Dolnośląskie Wydawnictwo Edukacyjne, Wrocław 2010.
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3. Kral L.: Elementy Budownictwa Przemysłowego, PWN, W-wa 1984
4. Praca zbiorowa pod red. Mitzel A. W. „Budownictwo Betonowe" t XIII, Arkady, 1966
5. Ledwoń J., Golczyk M.: Chłodnie Kominowe i wentylatorowe, Arkady, 1967
6. Kobiak J., Stachurski W.: Konstrukcje żelbetowe, Cz. II. Arkady, W-wa 1969
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8. Karty katalogowe systemów budownictwa przemysłowego
9. Kobiak J., Stachurski W.: Konstrukcje żelbetowe. Arkady, Warszawa 1964, 1968,1984, 1987.
10. Praca zbiorowa pod red. Bronisława Bukowskiego: Budownictwo Betonowe. Arkady, Warszawa 1965. Tom: IX, XII, XIII.
11. Łapko A.: Projektowanie konstrukcji żelbetowych. Arkady, Warszawa 2001.
12. Łapko A., Jansen B.J.: Podstawy projektowania i algorytmy obliczeń konstrukcji żelbetowych. Arkady, Warszawa 2005.
13. Sekcja Konstrukcji Betonowych KILiW PAN: Podstawy projektowania konstrukcji żelbetowych i sprężonych według Eurokodu 2. Dolnośląskie Wydawnictwo Edukacyjne, Wrocław 2006.
14. Tejchman, J., Małasiewicz, A.: Posadzki przemysłowe. Wydawnictwo Politechniki Gdańskiej, 2006.
15. Safarian, S. S., Harris, E. C.: Design and construction of silos and bunkers. Van Nostrand Reinhold Company, 1985.
16. Meller, M., Pacek, M.: Kominy przemysłowe, Wydawnictwo Uczelniane PolitechnikiKoszalińskiej, Koszalin ,2007.
17. Aktualne normy przedmiotowe.