

## SUBJECT CARD

Faculty of Civil and Environmental Sciences									
<b>Field of study</b>	<b>Civil Engineer</b>						<b>Level and form of study</b>	Full-time first cycle degree	
<b>Specialty / diploma path</b>	Common subject						<b>Education profile</b>	generally academic	
<b>Subject</b>	<b>Architectural design using the BIM model</b>						<b>Course code</b>	<b>B1S21017</b>	
							<b>Course type</b>	elective	
<b>Forms of classes and number of hours</b>	<b>W</b>	<b>Ć</b>	<b>L</b>	<b>P</b>	<b>Ps</b>	<b>T</b>	<b>S</b>	<b>Semester</b>	2
	15				30			<b>ECTS points</b>	4
<b>Introductory subjects</b>	Information technology with BIM elements, technical drawing and engineering graphics								
<b>Objectives of the subject</b>	To acquaint students with the basic principles of architectural design in BIM techniques. We are teaching how to use BIM programs in architecture design — teaching the basics of forming a functional plan of a simple architectural building and shaping its architectural form. Introduction to BIM methods in structural and conceptual design, including modeling and designing of an architectural object in a virtual environment. Using the BIM model in architectural design and plot development projects								
<b>Program content</b>	Lecture: Introduction to architectural design - architectural typology. Function and form in architecture and the spatial context. BIM - introduction: BIM history and contemporary trends of its development in design. The use of BIM in architectural design. Generative design and BIM methods in architecture. Architectural BIM models. Specialist workshop: developing an architectural and conceptual design of a simple single-family house (atrial house) in BIM technology. Preparation of project documentation in BIM technology. Development of a land development project in BIM technology. We are operating a 3D model in architectural design and forming the form and function of architectural solutions in a BIM environment. Development of plans, cross-sections, facades, visualization of architecture, and interior architecture. The use of the BIM 3d model in conceptual architectural design								
<b>Didactic methods</b>	Informative lecture, problem-solving lecture, architectural design on a "case study" basis within a specialist workshop								
<b>Form of credit</b>	Lecture - written exam, specialist workshop - evaluation of verification reviews, examination tests, final evaluation of the submitted project								
<b>Symbol of learning effect</b>	<b>Assumed learning outcomes</b>						<b>Reference to directional learning outcomes</b>		

EU1	Knows the issues of designing virtual architecture in BIM technology, knows the principles of analysis and modeling in the initial stages of architectural design using the BIM model, knows the basic methods, techniques, tools used in 3D + modeling	K_B1_W05 K_B1_W10
EU2	Is able to use knowledge and use BIM technology in conceptual design in architecture, can assess the usefulness of BIM methods and tools in solving architectural problems in the preliminary design of architecture and urban planning	K_B1_W10 K_B1_U01 K_B1_U07
EU3	He knows the norms, regulations and guidelines for the design of building objects and determining the functional program of such an object preceding architectural design, knows the rules for preparing the conceptual architectural and urban design as a form of investment project, including building law, is able to plan and carry out computer simulations in modeling of architectural objects and urban planning	K_B1_W06 K_B1_W11 K_B1_U04
EU4	Is able to model and design architectural objects, prepare photo-realistic visualizations of these objects, acquire and use BIM documentation of the building and make 3D + models in this technology	K_B1_W10 K_B1_U08 K_B1_U09
EU5	Is able to read and prepare architectural drawings, prepare graphic documentation, use selected computer programs supporting modeling and design processes in architecture and construction, plan and organize individual and team work in BIM technology. Has BIM knowledge in planning project work as well as preparing documentation and project management using 3D + models	K_B1_W10 K_B1_W11 K_B1_U03 K_B1_U07 K_B1_U14 K_B_U15
EU6	Is ready to critically assess his knowledge of the practical use of BIM technology in architectural design, has the competence to carry out activities in the field of conceptual-architectural design in an entrepreneurial way	K_B1_K01 K_B1_K03
<b>Symbol of learning effect</b>	<b>Ways to verify learning outcomes</b>	<b>Form of classes during which verification takes place</b>
EU1	written exam	W
EU2	assessment of project review, final assessment of the project	Ps
EU3	written exam, evaluation of project work review, final evaluation of the project	W,Ps
EU4	written exam, evaluation of project work review, final	W, Ps

	evaluation of the project			
<b>EU5</b>	assessment of project review, final assessment of the project		Ps	
<b>EU6</b>	assessment of project review, final assessment of the project		Ps	
<b>Student workload balance (in hours)</b>		<b>Number of hours</b>		
<b>Calculation</b>	Participation in lectures		15	
	Participation in a specialist workshop		30	
	Preparation for project tasks, thematic reviews, homework		30	
	Preparation for passing the lecture and presence on it (18h + 2h exam)		20	
	Participation in consultations		5	
		<b>TOTAL:</b>		100
<b>Quantitative indicators</b>		<b>HOURS</b>	<b>ECTS</b>	
<b>Student workload related to activities requiring direct teacher participation</b>		55	1,5	
<b>Student workload related to practical classes</b>		85	3	
<b>Basic literature</b>	<ol style="list-style-type: none"> <li>1. Mieszkowski, Z., Elementy Projektowania architektonicznego, Warszawa: Arkady, 1973.</li> <li>2. Kasznia D., Magiera J., Wierzowiecki P., BIM w praktyce : standardy, wdrożenie, case study, Warszawa : Wydaw. Naukowe PWN, 2017</li> <li>3. Brad Hardin B., McCool D., BIM and construction management : proven tools, methods, and workflows, Indianapolis : John Wiley a. Sons, 2015</li> <li>4. Ślęk R., ArchiCAD : wprowadzenie do projektowania BIM [Building Information Modeling], Gliwice : Helion, 2013</li> <li>5. Harty J., Kouider T., Paterson G., Getting to grips with BIM [Building Information Modelling] : a guide for small and medium-sized architecture, engineering and construction firms, London ; New York : Routledge/Taylor a. Francis Group, 2016</li> </ol>			
<b>Supplementary literature</b>	<ol style="list-style-type: none"> <li>1. Włodarczyk, J.A., Życie znaczy mieszkać, Warszawa – Kraków: Wydawnictwo Naukowe PWN, 1997.</li> <li>2. Rybczyński, W., Dom. Krótka historia idei, Gdańsk – Warszawa: Marabut - Volumen, 1996.</li> <li>3. Tomana M., BIM: innowacyjna technologia w budownictwie : podstawy, standardy, narzędzia, Kraków : PWB Media, 2016</li> </ol>			
<b>Implementing unit</b>		<b>Date of program development</b>		
<b>The program has developed</b>	dr inż. arch. Sławomir Wojtkiewicz	11.02.2019		

