

STUDY MODULE DESCRIPTION FORM		
Name of the module/subject BIM Technology		Code 1010102131010117823
Field of study Structural Engineering Second-cycle Studies	Profile of study (general academic, practical) (brak)	Year /Semester 2 / 3
Elective path/specialty -	Subject offered in: English	Course (compulsory, elective) obligatory
Cycle of study: Second-cycle studies	Form of study (full-time, part-time) full-time	
No. of hours Lecture: 30 Classes: - Laboratory: 15 Project/seminars: -		No. of credits 4
Status of the course in the study program (Basic, major, other) (brak)		(university-wide, from another field) (brak)
Education areas and fields of science and art technical sciences Technical sciences		ECTS distribution (number and %) 4 100% 4 100%
Responsible for subject / lecturer: dr hab. inż. Adam Glema, prof. nadzw. email: adam.glema@put.poznan.pl tel. +48 61 665 2104 Faculty of Civil and Environmental Engineering ul. Piotrowo 5 60-965 Poznań		
Prerequisites in terms of knowledge, skills and social competencies:		
1	Knowledge	knows principles of design, construction and operation of construction structures
2	Skills	can formulate and analyze elements of constructional investment use tools and solve problems on design and construction in civil engineering
3	Social competencies	is aware of the necessity to advance professional and personal competencies
Assumptions and objectives of the course: Introduction to technology of digitalization of data flow in construction industry and its application in multidisciplinary collaboration within construction investment project.		
Study outcomes and reference to the educational results for a field of study		
Knowledge: 1. has knowledge about advances in effectiveness, costs and time of construction projects realization - [[K_W10]] 2. has knowledge on data flow for management in the full life cycle of buildings - [[K_W19]] 3. knows standards for building information modeling - [[K_W14]]		
Skills: 1. makes use of dedicated tools to find useful information communicate and offer computer aided design and management - [[K_U05]] 2. can select analytical or numerical tools to solve technical problems - [[K_U13]] 3. can define a computer model and carry out analysis of buildings - [[K_U06]]		
Social competencies: 1. recognizes individual and team work of a problem and team management - [[K_K01]] 2. complements knowledge of modern technologies in civil engineering - [[K_K03]]		
Assessment methods of study outcomes		
Results of exercises for creation of building information model, application of viewers for model and its data information operations. elaboration of model in open standard IFC		

Course description		
<p>Introduction to Building Information Technology, history, definition. For whom BIM ? Owner, Owner Representative, Operator and Facility Manager, Facility End-User, Designer, Construction Contractor, Subcontractors, Specialist suppliers, Manufactures of construction materials and products. BIM in life-cycle stages of building. Data flow. Interoperability. openBIM. BuildingSmart. Open data model requirements. BIM implementation in the world. BIM levels 0-3. LOD Level of Detail. Level of Development. BIM standards. Industry Foundation Classes. Legal regulations in Poland. ISO, EN, PN. BIM case study for good practices. Formulation of BIM requirements. BIM Execution Plan. Roles and specializations in BIM.. BIM Manager and his responsibilities. Skills and experience in BIM. Competence criteria. Roles and specializations in BIM. Professional qualifications certification. BIM software. BIM model viewers. BIM software certification by BuildingSmart organisation. Examples of certificates and performance tests for import and export of IFC data. Visualization, laser scanning. BIM efficiency factors . Change of costs distribution for BIM workflow. BIM implementation in design company.</p>		
<p>Basic bibliography:</p> <ol style="list-style-type: none"> 1. Chuck Eastman, Paul Teicholz, Rafael Sacks, Kathleen Liston BIM Handbook: A Guide to Building Information Modeling for Owners, Managers, Designers, Engineers and Contractors 2nd Edition, Wiley, 2011 ISBN: 978-0-470-54137-1, (648 pages) 2. Karen Kensek, Douglas Noble Building Information Modeling: BIM in Current and Future Practice Wiley, 2014 ISBN: 978-1-118-76630-9, (432 pages) 3. Andrzeja Tomana BIM. Innowacyjna technologia w budownictwie. Podstawy technologii BIM, standardy i narzędzia oraz przykłady zastosowań w polskich firmach. BIMklaster, Kraków, 2015 ISBN: 978-83-943060-0-7, (294 str.) 		
<p>Additional bibliography:</p> <ol style="list-style-type: none"> 1. http://buildingsmart.org 		
Result of average student's workload		
Activity	Time (working hours)	
Student's workload		
Source of workload	hours	ECTS
Total workload	100	4
Contact hours	50	2
Practical activities	50	2