załącznik do Regulaminu programu „visiting profesor”

Osoba zgłaszająca z PW	
Tytuł i stopień naukowy	Dr hab. inż.
Imię i nazwisko	Kablak Nataliya
Wydział	Wydział Geodezji i Kartografii
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Propozycja osoby zgłaszanej jako visiting professor	
Tytuł i stopień naukowy	Doctor of Technical Sciences, Professor
Imię i nazwisko	Andriy ANNENKOV
Dokładna afiliacja	Department of Engineering Geodesy,
Mail kontaktowy	annenkov.ao@knuba.edu.ua
Opis osiągnięć (1/2-1 strony)	Annenkov Andriy is a professor at the Kyiv National University of Civil Engineering (KNUCA) and Architecture and has two scientific degrees. In 2023, KNUCA awarded him the academic title of Professor. In 2024, Annenkov Andriy confirmed his qualifications and passed the nostrafication of the diploma of Doctor of Technical Sciences at the Warsaw University of Technology. Annenkov Andriy received a master's degree from the Donbass National Academy of Civil Engineering and Architecture in 1997 in the specialty "Industrial and Civil Engineering". He received his second doctorate in technical sciences from KNUCA in 2021 in the specialty "Geodesy, Photogrammetry and Cartography" Annenkov Andriy has extensive experience in scientific, teaching and research work. He has a wide range of scientific and practical interests. In the field of construction production, he is engaged in the design of buildings and structures and performs calculations of the strength, reliability and bearing capacity of structures. In the field of Engineering Geodesy, he is engaged in scientific experiments on geodetic support of construction. Performs geodetic monitoring of deformations and damage to buildings and structures. Has extensive experience in using BIM technologies at all stages of the life cycle of buildings and structures. Works freely in

	AutoCAD, Revit, Tekla Structures, LIRA, SCAD software packages. Uses his experience in academic disciplines. Developed many training courses for students of civil engineers and surveying engineers. Annenkov Andriy Actively engaged in scientific activities with graduate students and postdoctoral fellows. Published over 100 scientific articles and conference abstracts. He Has one patent. He is the author of the Ukrainian regulatory document DBN "Planning and development of the territory". He is the winner of the competition "Best young scientist of the year of Ukraine" in 2008. Annenkov Andriy is a member of the editorial board of the scientific collection "Spatial Development". Is the scientific secretary of the specialized academic council of the university for the defense of doctoral dissertations.

Code of the course	4606-VP-ES-00030	Name of the course	Polish	**Podstawy BIM dla Inżynierów**	
			English	**BIM Fundamentals for Engineers**	
Type of the course	**Specialty subject**				
Course coordinator	**Andriy ANNENKOV**	Course teacher	**Andriy ANNENKOV**		
Implementing unit		Scientific discipline / disciplines*	civil engineering, geodesy and transport		
Level of education	Doctoral studies	Semester	stationary classes, October-November		
Language of the course	English				
Type of assessment	pass	Number of hours in a semester	60	ECTS credits	4
Minimum number of participants	10	Maximum number of participants	30	Available for students (BSc, MSc)	Yes

Type of classes		Lecture	Auditory classes	Project classes	Laboratory	Seminar
Number of hours	in a week					
	in a semester	12		48		

* does not apply to the Researcher's Workshop

1. Prerequisites
Building Information Management (BIM) is a digital description of every aspect of the built asset, using a combination of information-rich models. It looks to transform the way buildings are designed, constructed and managed, improving communications, cost, risk management, maximizing opportunities throughout a project and contributing to better project outcomes.

With sustainability at the forefront of the sector, the construction industry has been slow to digitise its practices, however, we are now seeing an adaption of digital processes, along with advancements in technology such as BIM 7D. These advancements allow professionals to manage building data efficiently and effectively and plan from modelling to management using different data sets.

In this course, we will explore the foundational principles of Building Information Modeling (BIM) and its practical applications, starting with the evolution of engineering from traditional 2D drawings to the shift towards object-based modeling, which forms the core of BIM. This understanding sets the stage for examining real-world implementations across diverse sectors including airports, residential and commercial buildings, water treatment plants, substations, transportation, and material handling facilities. We begin with BIM fundamentals through case studies demonstrating its role in enhancing efficiency and collaboration in complex projects. Moving forward, our focus shifts to Design Authoring workflows aligned with ISO 19650 standards, preparing participants for hands-on experience with Autodesk Revit. We explore Revit's user interface comprehensively, covering menus, ribbons, and key concepts such as Revit extensions, parameters, worksets, phases, design options, schedules, annotations, and sheet creation. Finally, participants delve into practical BIM modeling within Revit across architecture, structural, and MEP disciplines, equipping them with essential skills to create detailed and integrated BIM models across disciplines. Prerequisites: • Basic knowledge of Construction and surveying. • Familiarity with Construction Management • Understanding of Construction Practices Hardware Prerequisites: Minimum Entry level configuration as follows: 1. Operating System: 64-bit Microsoft® Windows® 10 or Windows 11 2. CPU Type: Intel® i-Series, Xeon®, AMD® Ryzen, Ryzen Threadripper PRO. 2.5GHz or Higher. 3. Memory: 8 GB RAM 4. Video Display: 1280 x 1024 with true color (Minimum) 5. Disk Space: 30GB free disk space Software Prerequisites: • To complete the training, postgraduate students must download and install the student version of Revit 2024 on their computer (https://manage.autodesk.com/products/RVT?version=2025&platform=WIN64&language=EINT)

2. Course objectives

familiarizing postgraduate students with the implementation of building information modeling technologies (BIM technologies) as one of the key components of the digital transformation of the engineering industry;

studying the theoretical bases and regulations for the practical implementation of innovative processes of geodetic support for the construction of buildings and structures based on a variant choice of organizational and technological solutions (methods) using BIM (Building Information Modeling) technology;

developing project management skills and an analytical approach to information support for the process of geodetic work in the form of the gradual formation of a complex building information system according to the saturation levels of the database of building properties and its constituent elements according to the levels of detail.

3. Course content (separate for each type of classes)

Lecture

1. Introduction to 3D Modeling. BIM Applications for Engineers

2. Global Role of BIM and Information Management in the Whole Life Cycle of Construction Projects

3. Pre-Project Planning Best Practices

4. Reality Capture Lessons Learned to Maximize Field Efficiency

5. Data Processing and 3D Modeling Tips for Best-in-Class Deliverables

6. Augment Terrestrial LiDAR with Photogrammetry: How to Take Building Documentation to the Next Level

7. Plan, Scan, Deliver: Best Practices for Large-Scale Laser Scanning Projects

8.From Beginner to Advanced: The Best Practices of Laser Scanning Projects

Project classes

1. Basic Editing Tools

2. Setting Up a Project

3. Building Envelope and Components

4. Detailing and Annotation

5. Visualization and Rendering

6. Project Collaboration and Documentation

7. Revit Family Creation

8. CAD lmport

9. BIM modeling based on laser scanning results

10. Final Project

The program is designed to gain practical experience in using the Revit program. The maximum number of training hours is used specifically for practical classes. As a result of completing the course, graduate students will gain the ability to perform BIM-modeling of buildings and structures based on the results of geodetic measurements and laser scanning. (BIM modeling examples are added as an additional file)

4. Learning outcomes			
Type of learning outcomes	Learning outcomes description	Reference to the learning outcomes of the WUT DS	Learning outcomes verification methods*
Knowledge			
K01	the main development trends of the represented scientific discipline with the related research methodology	SD_W3	**project evaluation**
K02	basic principles of knowledge transfer to the economic and social field, as well as commercialization of the results of scientific activity and know-how related to these results, including protection of intellectual property issues, also in open access	SD_W5	**project evaluation**
Skills			
S01	perform critical analysis and evaluation of the results of research, expert works, and other creative activities, as well as their contribution to the development of knowledge, in particular - evaluate usefulness and the ways to use the results of theoretical works in practice	SD_U2	**project evaluation**
S02	transfer the results of research activity to economic and social field	SD_U3	**project evaluation**
S03	independently plan and act for own development, as well as inspire and organize the developments of others, including through planning and participating in research projects	SD_U8	**homework**

Social competences			
SC01	critically assess the achievements within the represented scientific discipline and own contribution to the development of this discipline	SD_K1	**active participation during classes**
SC02	think and act in a creative and entrepreneurial way	SD_K4	**active participation during classes**

*Allowed learning outcomes verification methods: exam; oral exam; oral test; **project evaluation**; report evaluation; presentation evaluation; **active participation during classes; homework**; tests

5. Assessment criteria

6. Literature
Primary references: [1] Eddy Krygiel, Brad Nies. Green BIM: Successful Sustainable Design with Building Information Modeling. 272 pages [2] Alex Ishikawa. Revit Fundamentals: Ultimate Edition: Books One and Two. 2023. 116 pages [3] David Martin. Instant Revit!: A Quick and Easy Guide to Learning Autodesk Revit 2021. [4] Autodesk Revit 2025 BIM Management. Published November 1, 2024. By ASCENT. 732 pages Secondary references: [1]

7. PhD student's workload necessary to achieve the learning outcomes**		
No.	Description	Number of hours
1	Hours of scheduled instruction given by the academic teacher in the classroom	60
2	Hours of consultations with the academic teacher, exams, tests, etc.	15
3	Amount of time devoted to the preparation for classes, preparation of presentations, reports, projects, homework	25
4	Amount of time devoted to the preparation for exams, test, assessments	10
	Total number of hours	
	ECTS credits	**4**

** 1 ECTS = 25-30 hours of the PhD students work (2 ECTS = 60 hours; 4 ECTS = 110 hours, etc.)

8. Additional information	
Number of ECTS credits for classes requiring direct participation of academic teachers	
Number of ECTS credits earned by a student in a practical course	3