



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

BIM Technology

### Course

Field of study

Technologia BIM (BIM technology)

Area of study (specialization)

Structural Engineering

Level of study

Second-cycle studies

Form of study

full-time

Year/Semester

1/1

Profile of study

general academic

Course offered in

English

Requirements

compulsory

### Number of hours

Lecture

15

Laboratory classes

15

Other (e.g. online)

0

Tutorials

0

Projects/seminars

0

### Number of credit points

2

### Lecturers

Responsible for the course/lecturer:

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ul. Piotrowo 5 Poznań

Responsible for the course/lecturer:

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### Prerequisites

A student starting this course should have basic knowledge of construction, in particular:

- know the principles of structural design, construction and maintenance of buildings,
- be able to formulate and analyse the components of investment processes,
- use tools and with their help solve problems in design, construction and maintenance of buildings.

### Course objective

Introduction to technology and digitisation of data flows in the construction economy.



### Course-related learning outcomes

#### Knowledge

The student knows:

- in-depth principles of design of selected building objects
- methods of operation of selected computer programs supporting design of buildings, including BIM technology

#### Skills

Students will be able to:

- select and use dedicated tools for full information exchange and communication and offer computer-aided design and investment management
- define a model and analyse a building with its help

#### Social competences

The student:

- is responsible for the reliability of the obtained results of his/her work and the work of the team subordinated to him/her
- complements his/her knowledge by applying modern technologies and digitalisation in the construction industry

### Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Lecture - written test.

Laboratory - assessment of exercises for building a BIM construction data model, using IFC model viewers, including model verification. Evaluation of model presentation.

### Programme content

Lectures:

- Introduction to BIM building data modelling
- Manuals and Guides for BIM technology
- BIM model, BIM modelling
- BIM Management
- Levels, dimensions, types of BIM
- International Case Studies



- Case Studies in Poland

Laboratories:

independently or in cooperation in teams of 2 (Revit):

- modeling of a steel hall
- export of the hall model to IFC format
- modeling of an office building
- project presentation

### Teaching methods

Lectures - informative lecture with multimedia presentation.

Laboratories: multimedia presentation illustrated with examples and performing the tasks given by the instructor, solving individual or team tasks and elearnig with the instruction.

### Bibliography

Basic

- C. Eastman, P. Teicholz, R. Sacks, K. Liston, BIM Handbook. A Guide to Building Information Modeling for Owners, Managers, Designers, Engineers, and Contractors, Wiley, New Jersey, (2011).
- The Complete Beginner's Guide to Autodesk Revit Architecture – BIMscape
- 180213\_IFC\_Handbuch.pdf (autodesk.net)
- User Manual | Revit Products | Autodesk Knowledge Network
- REVIT\_Walkthrough\_getting-Started.pdf (designbuildacademy.com))

Additional

- Richard Garber (Editor) Closing the Gap: Information Models in Contemporary Design Practice Architectural Design, Wiley, (2009).
- Richard Garber, BIM Design: Realising the Creative Potential of Building Information Modelling Wiley, (2014).
- Karen Kensek, Building Information Modeling Series: Pocket Architecture, Routledge, (2014).
- Karen Kensek, Douglas Noble, Building Information Modeling: BIM in Current and Future Practice, Wiley, (2014).
- Brad Hardin, Dave McCool, BIM and Construction Management: Proven Tools, Methods, and Workflows, 2nd Edition, Wiley, (2015 ).



- Andre Borrmann, Markus König, Christian Koch, Jakob Beetz, Building Information Modeling. Technologische Grundlagen und industrielle Praxis, VDI, Springer, Wiesbaden, (2015).
- Stefan Mordue, Paul Swaddle, David Philp, Building Information Modeling For Dummies, Wiley, (2015).
- Government Construction Strategy, Cabinet Office, London, (2011).
- Digital Built Britain, Level 3 Building Information Modeling - Strategic Plan, UK Government. (2015). <https://doi.org/URN BIS/15/155>.
- Centre for Digital Built Britain at University of Cambridge, (2019). <https://www.cdbb.cam.ac.uk/>
- NIBS, National BIM Guide for Owners, NIBS. (2017).
- EUBIM Task Group, Handbook for the introduction of Building Information Modelling by the European Public Sector, EUBIM Task Group. (2016).
- AIA, Integrated Project Delivery: A Guide, American Institute of Architects. (2007). <https://doi.org/10.1016/j.autcon.2010.09.002>. <https://www.aiacontracts.org/resources/64146-integrated-project-delivery-a-guide>
- ISO 16739:2013. Industry Foundation Classes (IFC) for data sharing in the construction and facility management industries, (2013).
- IFC4 Document, (2016). <http://www.buildingsmart-tech.org/ifc/IFC4/Add2/html/>
- ISO 29481-1:2016 Building information models -- Information delivery manual Part 1: Methodology and format, (2016).
- BuildingSMART, (2019). <https://www.buildingsmart.org/> .2

### Breakdown of average student's workload

	Hours	ECTS
Total workload	60	2,0
Classes requiring direct contact with the teacher	30	1,0
Students' own work (literature studies, preparation for laboratory classes, preparation for the colloquium, performing laboratory exercises and presentations) <sup>1</sup>	30	1,0

<sup>1</sup> delete or add other activities as appropriate