COURSE DESCRIPTION CARD - SYLLABUS

Course name

BIM Technology

Course

Field of study

Civil Engineering

Year/Semester

2/3

Area of study (specialization)

CEM

Profile of study

general academic

Level of study

Second-cycle studies

Course offered in

English

Form of study

full-time

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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Responsible for the course/lecturer:

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Prerequisites

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

- know the principles of BIM modelling, IFC file export,

- be able to formulate and analyse components of investment processes and interdisciplinary cooperation

- take care of the need to improve professional and personal competences , use tools and with their help solve problems in design, execution and maintenance of construction objects.

Course objective

Application of technology and digitisation of data flow in interdisciplinary cooperation during investment task processes.

Course-related learning outcomes

Knowledge

The student knows:

- has knowledge of cost and time of construction projects and methods of their analysis using BIM

- has in-depth knowledge of standards for designing construction works in BIM

Skills

The student is able to:

- use software supporting the work of a designer and organizer of construction processes

- be able to prepare a cost estimate and schedule of construction works

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 cost and schedule preparation exercises. Evaluation of modelling of library objects.

Programme content

Lectures:

- Digitisation of construction.

- Digital exchange of construction data.

- BIM and openBIM, BIM Standards and Norms.

- Specialist certification and software certification.

- Functions and specialisations of BIM.

- Implementation of BIM in the company (locally) and in the state (globally, government)

- Producing cost estimates and schedules using data from a BIM model

Laboratories:

independently or in collaboration in teams of 2 (BIM Estimate, Revit):

- Preparing a cost estimate and schedule for the construction of an office building from the model made in sem. 1 i 2

- modelling of library objects

Teaching methods

Lectures - informative lecture with multimedia presentation.

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

Bibliography

Basic

• Xinan Jiang, Developments in Cost Estimating and Scheduling in BIM technology, https://repository.library.northeastern.edu/files/neu:835/fulltext.pdf

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 Prac-tice, 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) [1]	30	1,0

[1] delete or add other activities as appropriate