COURSE DESCRIPTION CARD - SYLLABUS

Course name
Construction process design [S2Bud1E-IPB>PPB]

Course

Field of study
Civil Engineering

Year/Semester
1/2

Area of study (specialization)
Construction Engineering and Management

Profile of study
general academic

Level of study
second-cycle

Course offered in
English

Form of study
full-time

Requirements
compulsory

Number of hours

Lecture
30

Laboratory classes
0

Other
0

Tutorials
15

Projects/seminars
0

Number of credit points

3,00

Coordinators

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Lecturers

Prerequisites

Basic knowledge about designing construction processes. Student is able to perform basic analysis of construction process.

Course objective

Knowledge how to design and perform simulation of construction process, based on main simulation methods.

Course-related learning outcomes

Knowledge:
Student
- knows in detail the rules of developing the procedures of construction project quality management and uses it to perform simulations
- knows and understand the need for systematic evaluation and maintenance of structure technical condition, with useage of modern solutions (monitoring, simulation, IoT)
-have detailed knowledge of the impact of building investments on the environment and understand the need to implement the rules of sustainable development.

Skills:
Student:
- uses advanced and specialized tools in order to obtain software supporting organizer of building engineering works
-utilizing the obtained knowledge, can select appropriate (simulation) methods and tools to solve technical problems

Social competences:
Student:
- takes responsibility for the reliability of working results and their interpretation
-is ready to autonomously complete and broaden knowledge in the field of modern processes and technologies of building engineering
-are aware how important is sustainable development in building engineering

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Learning outcomes presented above are verified as follows:
Student work includes:
-project concerning three main methods in simulation (System Dynamics, Discrete-Event, Agent-Based)
-presentation of choosen topic related to process design
Rating scale:
91-100 A
81-90 B
71-80 C
61-70 D
51-60 E
<50 F

Programme content

Lectures: Introduction of construction site management aproach, usage of modern technologies (genesis and development)
Tutorials: Introduction of basic simulation methods (genesis and development of simulation) as well as introduction of modern technology used on construction sites (IoT, Machine Learning).

Course topics

none

Teaching methods

Lectures: problem lecture/lecture with presentations/ case study
Tutorials: method based on useage of various source of knowlegde such us: film, photos, source files and prsentations/ Case study/ Project method includes designing and performing simulation model and result testing.

Bibliography

Basic
1. Kaplinski O., Modeling of construction processes. A managerial approach., PAN, Warszawa 1997
2. Grigoryev I., AnyLogic in Three Days: Modeling and Simulation Textbook, Fifth edition, 2018
Additional
1. A. Borshchev, I.Grigoryev, The Big Book of Simulation Modeling. Multimethod Modeling with AnyLogic8, Anylogic North America, 2013)

Breakdown of average student's workload

	Hours	ECTS
Total workload	90	3,00
Classes requiring direct contact with the teacher	45	1,50
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	45	1,50