COURSE DESCRIPTION CARD - SYLLABUS

Course name
Multidisciplinary project [S2Bud1E-IPB>PI]

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
15

Laboratory classes
0

Other
0

Tutorials
15

Projects/seminars
30

Number of credit points

3,00

Coordinators

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Lecturers

Prerequisites

The student has basic knowledge of the basics of construction; The student is able to obtain information from the indicated sources and analyze engineering activities undertaken; The student is aware of the need to constantly update and supplement construction knowledge and take responsibility in professional work; The student is aware of the issues of management in construction

Course objective

Learning and expanding knowledge in the field of sustainable construction as well as methods and techniques of managing a construction project, i.e. flexible design, artificial intelligence, lean and agile management

Course-related learning outcomes

Knowledge:
Have detailed knowledge of the impact of building investments on the environment and understand the need to implement the rules of sustainable development.
Have detailed knowledge in the field of operation algorithms of selected software supporting the analysis and design of building facilities, which are also useful to plan and manage construction projects,

including Building Information Modelling (BIM).
Know in detail the rules of developing the procedures of construction project quality management; have knowledge of the effectiveness, costs and timing of construction projects under risk and uncertainty conditions.

Skills:
Utilizing the obtained knowledge, they can select appropriate (analytical, numerical, simulation, experimental) methods and tools to solve technical problems.
Applying scientific rules and skills, are able to formulate and test hypotheses related to simple research problems, in order to solve engineering, technological and organisational problems in construction engineering; can prepare studies preparing for research work.
Can estimate hazards of building projects and building operation, implement suitable safety rules and prepare work standards as well as quality management procedures.

Social competences:
Can realise that it is necessary to improve professional and personal competence; are ready to critically evaluate the knowledge and received content.
Understand the need to transfer to the society the knowledge about building engineering, transfer the knowledge in a clear and easily comprehensible manner.
Are ready to think and act in a business-like way.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Learning outcomes presented above are verified as follows:
Lectures - credit based on the student"s activity and the contribution of work to the preparation and presentation of experience in the profession (internships / internships / work)
Tutorials- as a form of measuring / assessing student work, a final test is carried out (during the last class)
Grade scale determined% from:
90 very good (A)
85 good plus (B)
75 good (C)
65 sufficient plus (D)
55 satisfactory (E)
below 54 insufficient (F)
Projects- execution and defense of a design exercise, which is assessed according to the work input and the substantive content of the work

Programme content

Lectures:
Lecture 1 - Introduction
Lecture 2-4 Overview of topics:
Topic 1 - Modular construction - flexibility in single-family housing
Topic 2 - Principles of selection of system formwork based on the example of the PERI system
Topic 3 - Positive-energy house
Topic 4 - Selection of parameters for the delivery process of a ready-made concrete mix on the basis of modeling the production process, delivery and laying of a concrete mix
Topic 5 - Managing the cold-temperature concreting process based on simulation of the processes occurring in the concrete and its surroundings
Topic 6 - Design of infrastructure facilities using the idea of flexibility - life cycle model - alternatively modeling options for different scenarios
Topic 7 - Selfhealing concrete
Lecture 5-7 Seminars - presentation of students" experiences
Projects:
Project 1 - Introduction, energy efficiency
Project 2-6 - Review of the study - active house
Project 7 - Defense of the design exercise
Tutorials:

Classes 1 - Introduction
Classes 2-4 Energy efficiency of buildings, sustainable solutions
Exercises 5-6 - Modular housing
Classes 7 - Final test

Course topics

none

Teaching methods

Pyramid discussion; Panel discussion; The classic problem method; Exchange of ideas; Computer applications, Informative lecture; Problem lecture; Conversational lecture; Program text; Work with a book; Talk; Lecture reading; Demonstration method; ; Production exercise method; Method of experiments; Observation and measurement method; Project method; Leading text method; Workshop method; Show.

Bibliography

Basic
1. Schmidt R III, Austin S. Adaptable Architecture, theory and practice; Routledge Taylor & francis Group, London, NY 2016
2. March. Ch. Operations management for construction, Hoboken, NJ : Taylor and Francis, 2009. - 223 p.
3. Neufert E. Bauentwurtfslehre; Vieweg & Sohn; Wiesbaden, 2000
Additional
1. J. Douglas, Building adaptation. 2nd ed. Great Britain, Elsevier Ltd. 2006

Breakdown of average student's workload

	Hours	ECTS
Total workload	90	3,00
Classes requiring direct contact with the teacher	60	2,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	30	1,00