COURSE DESCRIPTION CARD - SYLLABUS

Course name
Construction project management [S2Bud1-IPB>ZPB]

Course

Field of study
Civil Engineering

Year/Semester
1/1

Area of study (specialization)
Construction Engineering and Management

Profile of study
general academic

Level of study
second-cycle

Course offered in
Polish

Form of study
full-time

Requirements
compulsory

Number of hours

Lecture
30

Laboratory classes
0

Other
0

Tutorials
0

Projects/seminars
30

Number of credit points

3,00

Coordinators

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Lecturers

Prerequisites

Knowledge: knowledge of the key subjects included in the standard of education of a civil engineer at first-cycle studies within the chosen specialization of studies. Skills: designing and analysis of simpler building structures and production planning using cost estimation and general schedule methods. Social competences: openness to cooperation and team respect for the effects of creative design work of engineers in a construction investment project.

Course objective

Co-creation of professional qualifications of general construction civil engineers as designers and managers. Familiarization with the international guidelines of competence in project management as a form of integration of engineering knowledge in a managerial context. The integration of knowledge about designing and constructing, also in the context of Open BIM, and planning a project, as the basis for organizing, motivating and monitoring, especially with the use of computer-aided schedules.

Course-related learning outcomes

Knowledge:
1. Getting to know the project management knowledge areas according to ISO, PMI and IPMA and their

connection with other construction knowledge in the field of construction investment projects.
2. Knowledge of the basic formal and legal procedures of the construction investment process, including the public procurement law and the content of the construction tender documentation.
3. Knowledge of project management software (PMS), including BIM class software (3D PMS) in the field of key analytical methods in terms of construction needs.
4. Knowledge on business activity in construction industry and the ways of developing different forms of individual entrepreneurship; understand the principles of enterprise financial economy

Skills:
1. Typology of undertakings in various procurement, delivery and financing systems and identification of key problems and risk factors in the relationship between the parties to the construction contract.
2. Ability to develop a project plan, including the material and financial schedule and derivative analyzes (histogram/cyclogram/esogram) as part of the investment task.
3. Team work with the Open BIM context, including collaboration and data exchange in terms of international open standards and national management standards.

Social competences:
1. Teamwork competences - a sense of a common goal, the role of communication and motivation.
2. A holistic view of the project from the recipient"s point of view - user/ordering party/investor.
3. Understanding design as a conceptual preparation of activities and a key form of planning.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

The basis for passing the lecture is a written test with up to 6 issues (short tasks such as describe or calculate) with more than half of the correct answers, and the basis for passing the exercises is to solve a medium complex problem in the field of organization of a construction project using design methods.

Programme content

Knowledge
1. Getting to know the project management knowledge areas according to ISO, PMI and IPMA and their connection with other construction knowledge in the field of construction investment projects.
2. Knowledge of the basic formal and legal procedures of the construction investment process, including the public procurement law and the content of the construction tender documentation.
3. Knowledge of project management software (PMS), including BIM class software in the field of key analytical methods in terms of construction needs.

Skills
1. Typology of undertakings in various procurement, delivery and financing systems and identification of key problems and risk factors in the relationship between the parties to the construction contract.
2. Ability to develop a project plan, including the material and financial schedule and derivative analyzes (histogram/cyclogram/esogram) as part of the investment task.
3. Team work with the Open BIM context, including collaboration and data exchange in terms of international open standards and national management standards.

Social competences
1. Teamwork competences - a sense of a common goal, the role of communication and motivation.
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3. Understanding design as a conceptual preparation of activities and a key form of planning.

Course topics

As part of the lecture part (knowledge and overview of problems, methods, tools and legislation), as part of the practical part, work with the Open BIM model of the building as the basis for information about the building object. Simplified estimation of costs and labour intensity using a preset form. Preparation of a material and financial schedule of the building in small teams, including key check charts. Communication using the BIM cloud in working on building and model development and the master plan for the project.

Teaching methods

Lecture: presentations with the use of slides, oral explanations and sketches on a blackboard. Project excercises: planning a project using computer-aided methods, including teamwork and workgroup.

Bibliography

Basic
1. Kacprzyk Z., Projektowanie w procesie BIM. Oficyna Wydawnicza PW, Warszawa 2020.
2. Kosecki A., Kontraktowanie realizacji przedsięwzięć budowlanych. AGH, Warszawa 2015.
3. Pawlak M., Zarządzanie projektami. PWN, Warszawa 2006.
4. Praca zbiorowa. Podręcznik dla inwestorów przedsięwzięć infrastrukturalnych. MRR, Warszawa 2010.
5. Stockes E., Akram S., Zarządzanie przedsięwzięciami budowlanymi. Poltext, Warszawa 2010.
6. Staniszkis W. W., Organizacja i zarządzanie w budownictwie. PWN, Warszawa 1982.
7. Strzelecka E., Glinkowska B., Maciejewska M., Wiażel-Sasin B., Zarządzanie przedsięwzięciami budowlanymi w gospodarce polskiej: podstawy, procedury, przykłady. Wydawnictwo PŁ, Łódź 2014.
8. Wiatr T., Studium przedsięwzięcia badawczo-dydaktycznego w ujęciu Open BIM PL – problemy I metody. Przegląd budowlany 2/2021.

Additional
1. Baldwin M., The BIM-Manager: A practical guide for BIM project management. Beuth, 2019.
2. Buttelwerth J., Phoenix - real world scheduling. John Wyatt Publishing & www.phoenixcpm.com
3. Halphin W. H., Construction management. Wiley, 2006.
4. Hendrickson C., Project management for construction. Fundamentals Concepts for Owners, Engineers, architects and builders. Carnegie Mellon University, Pittsburgh 2008.
5. O-Brien J., Plotnick F., CPM in construction management. 6th Edition. McGraw-Hill, 2006.
6. Winch G. M., Managing construction projects. Blackwell Publishing, 2002.

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