

STUDY MODULE DESCRIPTION FORM		
Name of the module/subject Construction Technology Laboratory		Code 1010112121010115660
Field of study Civil Engineering	Profile of study (general academic, practical) general academic	Year /Semester 1 / 2
Elective path/specialty -	Subject offered in: Polish	Course (compulsory, elective) obligatory
Cycle of study: Second-cycle studies	Form of study (full-time, part-time) full-time	
No. of hours Lecture: 15 Classes: - Laboratory: 45 Project/seminars: -		No. of credits 3
Status of the course in the study program (Basic, major, other) major		(university-wide, from another field) from field
Education areas and fields of science and art technical sciences		ECTS distribution (number and %) 3 100%
Responsible for subject / lecturer: Roman Milwicz email: roman.milwicz@put.poznan.pl tel. 616652830 Budownictwa i Inżynierii Środowiska ul. Piotrowo 5 60-965 Poznań		Responsible for subject / lecturer: Piotr Nowotarski email: piotr.nowotarski@put.poznan.pl tel. 616652830 Budownictwa i Inżynierii Środowiska ul. Piotrowo 5 60-965 Poznań
Prerequisites in terms of knowledge, skills and social competencies:		
1	Knowledge	Basic methods of determining the cost of living buildings LCC. Basic methods of costing of buildings Basic methods of planning construction projects
2	Skills	Learn how to calculate LCC object Ability to create cost estimates
3	Social competencies	Awareness of lifelong learning, the ability to work in a group and adopt different social roles
Assumptions and objectives of the course: Familiarize students with the methodology for calculating the LCC, the methods of creating and calculating cost estimates and familiarization with the methods of planning construction projects		
Study outcomes and reference to the educational results for a field of study		
Knowledge:		
1. Student knows the procedures for quality management of construction projects. Knowledgeable about the effectiveness, cost and lead time construction projects under risk and uncertainty - [K_W10]		
2. Student has knowledge about doing business in the construction industry. Understand the principles of financial management companies. - [K_W11]		
3. Student knows and applies the provisions of construction law - [K_W17]		
4. The student has knowledge about the impact of the investment and the existing buildings on the environment - [K_W13]		
Skills:		
1. Uses specialized tools to find useful information, communication and acquisition of software to support the work of the designer and organizer of the building process - [K_U05]		
2. Student knows how to draw up a schedule of construction and cost estimate, contract or construction project business plan, manage, manage the building process, set out the obligations and responsibilities of project supervision and construction - [K_U10]		
3. Student is able to carry out risk analysis in the implementation of projects and operation of buildings and implement appropriate measures and safety. Able to develop standards and norms of work and quality management procedures. - [K_U12]		
4. Student can make the development of preparing him to undertake scientific work. - [K_U18]		
Social competencies:		

1. Student can carrying out certain tasks to work independently, to work in a team and manage a team. - [K_K01]
2. Student is responsible for the accuracy of the results of their work and an assessment of the work of a subordinate unit - [K_K02]
3. Student can complement and extens knowledge of modern processes and technologies in construction - [K_K03]
4. Student is aware of the need for sustainable development in construction - [K_K04]
5. Student understands the need to inform the public knowledge of the construction - [K_K08]

Assessment methods of study outcomes		
The activity of the student in the classroom Final test of the lectures Indirect tests, after each major part of material		
Course description		
Acquainted with the methodology of LCC Implementation of the project of LCC Acquainted with the program NORMA EXPERT The creation of the construction-estimate		
Basic bibliography:		
1. Kosztorysowanie i normowanie w budownictwie, Zdzisław Kowalczyk, Jacek Zabielski		
2. Kosztorysowanie w budownictwie. Tadeusz Laurowski		
3. Life Cycle Costing: Techniques, Models, and Applications Balbir S. Dhillon		
Additional bibliography:		
1. Cost Analysis and Estimating for Engineering and Management Phillip F. Ostwald, Timothy S. McLaren		
2. Materiały udostępnione na portalu edukacyjnym Moodle PUT		
Result of average student's workload		
Activity	Time (working hours)	
1. Lectures	15	
2. Laborathories	45	
3. Student's own work	30	
Student's workload		
Source of workload	hours	ECTS
Total workload	75	3
Contact hours	60	2
Practical activities	15	1