STUDY MODULE DESCRIPTION FORM

Name of the module/subject		Code
Technology and management of works		**1010134251010114642**
Field of study	Profile of study (general academic, practical)	Year /Semester
Environmental Engineering Extramural First-	**general academic**	**3 / 5**
Elective path/specialty	Subject offered in:	Course (compulsory, elective)
-	**Polish**	**obligatory**
Cycle of study:	Form of study (full-time,part-time)	
First-cycle studies	**part-time**	
No. of hours		No. of credits
Lecture: **20** Classes: **-** Laboratory: **-** Project/seminars: **10**		**3**
Status of the course in the study program (Basic, major, other)	(university-wide, from another field)	
other	**university-wide**	
Education areas and fields of science and art		ECTS distribution (number and %)

Responsible for subject / lecturer:

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Prerequisites in terms of knowledge, skills and social competencies:

1	**Knowledge**	Basic knowledge of building materials, construction, installation design
2	**Skills**	Obtaining information from the literature on the subject Skills in analysing engineering activities
3	**Social competencies**	Workteam skills Responsibility for the accuracy of the results of one?s work

Assumptions and objectives of the course:

Understanding the basics in technology and organization of works and cost calculation. To provide students with skills in developing schedules and cost estimates of works.

Study outcomes and reference to the educational results for a field of study

Knowledge:

1. Basics of technology and mechanization of works - [[K_W07, K_W09]]
2. Knowledge of principles and methods for the work organization and planning - [[K_W07, K_W09]]
3. Understanding of cost calculation methods and conducting estimates rules - [[K_W07, K_W09]]

Skills:

1. Student can apply appropriate methods for works realization under specific conditions - [[K_U01, K_U02, K_U16]]
2. Student can plan and control the work process by means of scheduling and netwrok methods - [[K_U01, K_U02, K_U16]]
3. Student can develop a cost estimate for the selected scope of works - [[K_U01, K_U02, K_U12]]

Social competencies:

1. Student is able to determine priorities for the task realization - [[K_K04]]
2. Student is aware of the need for advancing qualifications and updating knowledge acquired - [[K_K01]]
3. Student understands the importance of organization and management issues in the engineering domain - [[K_K02]]

Assessment methods of study outcomes

written exam: 60 minutes test

Rating scale:

91-100 very good

81-90 good plus

71-80 good

61-70 dostateczna plus sufficient plus

51- 60 sufficient

below 50 insufficient

project: technology, organization and evaluation of the indicated range of installation works

Course description

Specificity of the construction industry. Division of construction processes. Organizational principles. Construction work measurement and standardization. Teamwork. Equipment and team work productivity. Work organization methods. Fundamental assumptions of the Line-Of-Balance method. Construction schedules, types and principles of drawing up. Network methods of planning the course of construction work. Comprehensive mechanization of work. Preparatory and earthworks thechnology. Technology and organization of the implementation of external networks. Aspects of the construction site layout planning. Methods and types of estimates. Basics of developing an estimate. Principles of calculating costs and price.

Teaching methods:

Lecture: informative lecture, problem lecture, lecture with multimedia presentation

Project: project design, team work, discussion

Basic bibliography:

1. Jaworski K.M., Podstawy organizacji budowy, Wydawnictwo Naukowe PWN, Warszawa, 20017 (wznowienie)
2. Martinek W., Nowak P., Woyciechowski P., Technologia robót budowlanych, Oficyna Wydawnicza Politechniki Warszawskiej, Waszawa 2010
3. Pisarska E., Połoński M. Elementy organizacji robót inżynierskich, Wydawnictwo SGGW, Warszawa 2000
4. Smoktunowicz E.; Kosztorysowanie obiektów i robót budowlanych, Polcen, Warszawa 2001
5. Polskie standardy kosztorysowania robót budowlanych. Wyd. Stowarzyszenie Kosztorysantów Budowlanych, Warszawa, 2005

Additional bibliography:

1. Dyżewski A., Technologia i organizacja budowy, Arkady, Warszawa, 1990
2. Kubica J., Technologia robót budowlanych, Wydawnictwo PK, 2013
3. Zajączkowska.T. Kalkulacja kosztorysowa i jej komputerowe wspomaganie, Zamex, Kraków 2002
4. Werner W.A., Proces inwestycyjny w budownictwie, Oficyna Wydawnicza Politechniki Warszawskiej, Warszawa, 2000
5. Dziadosz A., Gajzler M., Kończak A., Transport w kalkulacji kosztorysowej robót budowlanych, Logistyka 6/2014, s. 14173-14180
6. Hajdasz M., Managing repetitive construction in a dynamically changing project environment: Conceptualizing the system?model?simulator nexus, Automation in construction, 2015, s. 132-145

Result of average student's workload

Activity	Time (working hours)
1. Participation in lectures	30
2. Participation in exercises	15
3. Preparation of the project	15
4. Prepare to pass lectures	15

Student's workload

Source of workload	hours	ECTS
Total workload	75	3
Contact hours	45	2
Practical activities	30	1