FACULTY OF CIVIL ENGINEERING

SUBJECT CARD

Name in English:	**Construction techniques and processes**
Name in Polish:	**Technologia robót budowlanych**
Main field of study (if applicable):	***Civil Engineering***
Specialization (if applicable):	**Civil Engineering**
Level and form of studies:	**~~1st /~~ 2nd level*, ful-time ~~/ part-time~~***
Kind of subject:	**obligatory / ~~optional / university-wide~~***
Subject code:	**CEB008662**
Group of courses:	**~~YES~~ / NO***

	Lecture	Classes	Laboratory	Project	Seminar
Number of hours of organized classes in University (ZZU)	**15**			**30**	
Number of hours of total student workload (CNPS)	**30**			**60**	
Form of crediting	Examination ~~/ crediting with grade~~ *	Examination / crediting with grade *	Examination~~-~~/ crediting with grade *	~~Examination~~ / crediting with grade *	Examination~~-~~/ crediting with grade *
For group of courses mark (X) final course					
Number of ECTS points	**1**			**2**	
including number of ECTS points for practical (P) classes				**2,0**	
including number of ECTS points for direct teacher-student contact (BK) classes	**0,7**			**1,2**	

*niepotrzebne skreślić

PREREQUISITES RELATING TO KNOWLEDGE, SKILLS AND OTHER COMPETENCES
1. The student has knowledge on building materials and theory of structures.
2. The student is capable to design and elaborate structural analysis of basic building structures.
3. The student is familiar with organization of production processes in construction industry.

SUBJECT OBJECTIVES	
C1.	to transfer the knowledge on construction techniques and processes
C2.	to train competencies for identification and resolving of considerable problems concerning execution of construction processes which are part of a complex construction project
C3.	the prepare the alumni for self-dependent managerial positions focused on construction works and supervision of teams in construction industry
C4.	to get the ability for self-study and continuous learning of new problems being permanently created in construction practice, corresponding to development of building materials and building technology.

SUBJECT EDUCATIONAL EFFECTS	
Relating to knowledge:	
PEK_W01	the student knows modern building materials and products as long as scope of their application on a construction site.
PEK_W02	the student has advanced knowledge on performing the main type of construction works (earthworks, concrete works, assembly of structure, finishing works).
PEK_W03	the student has advanced knowledge on production processes which are used in housing and industrial objects construction.
PEK_W04	the student has advanced knowledge on some selected types of complex construction works, which are specially demanded on a present building market (as: glazing facades, etc.).
Relating to skills:	
PEK_U01	can plan and prepare the investment process for execution phase, including time planning of works, planning the machinery employment, programming of the site work brigades.
PEK_U02	can identify the technical risks which may the project be faced to during the execution of a given design specification and also can define the technical tools for reducing or eliminating the risk.
Relating to social competences:	
PEK_K01	the student is aware of need of permanent increasing of professional and personal competencies by means of formal and not formal training exercises on new construction technology problems.
PEK_K02	the student is aware about importance of technical and non-technical aspects and effects of engineering activities, like their influence on the environment and responsibility allocated to it.

PROGRAMME CONTENT		
Form of classes - lecture		**Number of hours**
Lec1	Advanced problems on earthworks: quality control testing, protection of deep excavations, dewatering of excavations, machinery, soil transportation, etc. Temporary structures on site.	3
Lec2	Methods of new retaining structures in construction. Top-down method of building construction.	2
Lec3	Advanced problems on concrete construction works: quality site testing, special types of formworks, etc.	2
Lec4	Industrial floor technology	2
Lec5	Advanced problems on structural assembly. Stability of structures during assembly phase.	2
Lec6	Execution methods of glazed facades	2
Lec7	Fire protection in construction	2
	Total hours	**15**

Form of classes - class		**Number of hours**
Cl1		
...		
	Total hours	

Form of classes - laboratory		**Number of hours**
Lab1		
…		
	Total hours	

Form of classes - project		Number of hours
Proj1	Presentation of the overall scope of the project exercise which consist of: planning of all construction works / site processes needed to construct the building object defined individually for each student. Detailed guidance for all required parts of the project report content.	4
Proj2	Concept plan. Breakdown of the whole construction project into stages.	4
Proj3	Machinery and work brigades selection and allocation.	2
Proj4	Evaluation of time and cost of the planned works.	4
Proj5	Gantt chart of works. Critical activities.	2
Proj6	Detailed specification of particular site works operations, including specificatiosn of eventual temporary structures and scaffoldings needed for execution of planned operations.	4
Proj7	Detailed engineering drawings presenting all stages of the construction works execution. Text part of specification of the works.	4
Proj8	Presentation of reports with group discussion	2
Proj9	Final presentation of reports with final evaluating (final grades)	2
	Total hours	**30**

Form of classes - seminar		Number of hours
Sem1		
…		
	Total hours	

TEACHING TOOLS USED
LECTURE N1. Regular lecture with multi-media presentation. Presentation of construction site case studies. Presentation of selected data taken from real projects completed before. N2. Contact hours for students. **PROJECT** N3. Presentation of the scope and step-by-step the whole process of elaborating the report N4. Presentation performed by students, demonstrating the intermediate project exercise results. N5. Contact hours for students.

EVALUATION OF SUBJECT EDUCATIONAL EFFECTS ACHIEVEMENT		
Evaluation (F – forming (during semester), P – concluding (at semester end)	Educational effect number	Way of evaluating educational effect achievement
P (lecture)	PEK_W01, PEK_W02, PEK_W03 PEK_W04	EXAMINATION
P (project)	PEK_U01 PEK_U02	Check of the final report, considering as a supplement, the student's verbal individual presentation of some report issues.

PRIMARY AND SECONDARY LITERATURE
PRIMARY LITERATURE: 1. Allen E., Iano J., Fundamentals of building construction. Fifth Edition. Wiley. 2009. 2. Concrete construction engineering handbook (ed. Nawy G.) Second Edition. CRC Press, Taylor & Francis Group, 2008. 3. Cooke R., Building in the 21st century. Blackwell Publ. 2007. 4. Emmitt S., Gorse Ch.A., Barry's advanced construction of buildings. Wiley-Blackwell Publ. 2010. 5. Fleming E., Construction Technology an illustrated introduction. Blackwell Publ. 2005. 6. Illingworth J. R., Construction methods and planning. Chapman & Hall, 2000. 7. Singh J., Heavy construction: planning, equipment and methods. AA Balkema, 2001. 8. Temporary Works – Principles of Design and Construction. Ed.: Grant M., Pallett P.F..ICE Publ. 2012 **SECONDARY LITERATURE:** 1. Nunnually S.W., Construction Methods and Management. Eight Edition. PEARSON, 2011.

SUBJECT SUPERVISOR (NAME AND SURNAME, DIVISION, E-MAIL ADDRESS)
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MEMBERS OF THE EDUCATIONAL TEAM (NAME AND SURNAME, E-MAIL ADDRESS)

MATRIX OF CORRELATION BETWEEN EDUCATIONAL EFFECTS FOR SUBJECT
Construction techniques and processes
AND EDUCATIONAAL EFFECTS FOR MAIN FIELD OF STUDY ***Civil Engineering***
AND SPECIALIZATION **Civil Engineering**

Subject educational effect	**Correlation between subject educational effect and educational effects defined for main field of study and specialization (if applicable)****	**Subject objectives *****	**Programme content *****	**Teaching tool number *****
Knowledge				
PEK_W01	K2_W10, K2S_CEB_W21	C1, C2, C3, C4	Lec1 do Lec5	N1, N2,
PEK_W02	K2_W11, K2_W14, K2S_CEB_W21	C1, C2, C3, C4	Lec1 do Lec5	N1, N2,
PEK_W03	K2_W11, K2_W13, K2S_CEB_W21	C1, C2, C3, C4	Lec1 do Lec6	N1, N2,
PEK_W04	K2_W11, K2S_CEB_W21	C1, C2, C3, C4	Lec1 do Lec6	N1, N2.
Skills				
PEK_U01	K2_U01, K2_U13, K2_U16,	C1, C2, C3, C4	Proj1 do Proj8	N3, N4, N5
PEK_U02	K2_U14, K2S_CEB_U23	C1, C2, C3	Proj1 do Proj8	N3, N4, N5
Social competence				
PEK_K01	K2_K01, K2_K02	C3, C4	Lec1 do Lec6	N1
PEK_K02	K2_K04	C2	Lec1 do Lec6	N1

** - enter symbols for main-field-of-study/specialization educational effects
*** - from table above