Faculty of Civil and Environmental Engineering				
Study programme	**Civil Engineering**		Degree level: full-time/part-time programme	**master`s degree (full-time studies)**
Specialization	**RiUOB**		Diploma path:	
Module name:	**Technogy of construction works II**		Module ID:	**L22315**
Module type:	**obieralny S**	Semester: **2**	ECTS	**3**
No. of hrs in semester:	L - 30 C- 0 L- 0 P- 15 Ps- 0 S- 0			
Knowledge of the subjects	*Concrete technology, Civil engineering, Technology of construction works, Monolithic building, Concrete Structures, Foundations, Geoengineering*			
Aims and objectives:	Reminder known and knowledge of new technologies implementation of building objects in the context of a comprehensive mechanization, automation and robotics. The inclusion of random disturbances and conditions in the design of the building process. Developing the need for continuous learning in order to improve professional competence.			
Teaching methods: lecture, project	Lecture - written exam, project - the construction of the project, corrections, discussion - oral exam project			
Module content:	Mechanization and automation of construction processes. Technology of complex construction processes: deep excavations, realization of tall buildings, the implementation of bridges, massive concrete structures. Automation and robotics in the implementation of selected construction processes. Realization of construction works in winter conditions.			

Learning outcomes	*Student that passed the module:*	*Relevance to the programme learning outcomes*
EK1	dokonuje analizy złozonych procesów budowlanych z uwzględnieniem warunków losowych	K_B2_W13, K_B2_U03, K_B2_U12, K_B2_U13,
EK2	ustala warianty zestawów maszyn do realizacji złożonych procesów budowlanych	K_B2_W16, K_B2_U13
EK3	określa strukturę niezawodnościową zestawów maszyn i podaje metody ich polepszania	K_B2_W17, K_B2_U12
EK4	analizuje efektywność: koszt i czas pracy zestawów maszyn	K_B2_W08, K_B2_U16, K_B2_U14
EK5	umie korzystać z internetowych i innych źródeł baz danych	K_B2_U05, K_B2_K01
EK6	ustala wymagnia i sposoby zarządzania BIOZ podczas realizacji złożonych procesów budowlanych	K_B2_W13, K_B2_U12,
EK7		
EK8		

	lecture attendance	15 x 2h =	30
	Participation in the activities of design	15 x 1h =	15
	participation in student-teacher sessions related to the class / seminar /		1
	implementation of project tasks and prezentation	10 x 1h =	10
	preparation for and participation in exams/tests	18h+2h =	20
	preparing to pass the project exercises		14
		RAZEM:	90
quantitative indicators	Student workload - activities that require direct teacher participation 30h+15h+1h+2h=48	48	ECTS 2
	Student workload - practical skills activities 15h+1h+10h+14h=40	40	1,5
Basic references:	*1. Kiernożycki Wł.: Betonowe konstrukcje masywne. Teoria, Wymiarowanie Realizacja. Polski Cement Sp. z o.o., Kraków 2003. 2. Linczowski Cz. Technologia robót budowlanych. Politechnika Świętokrzyska. Kielce, 2000r. 3. Orłowski Z.: Podstawy technologii betonowego budownictwa monolitycznego. Wydawnictwo Naukowe PWN, Warszawa 2010. 4.Martinek W. Nowak P. Wojciechowski P.: Technologia robót budowlanych, Politechnika Warszawska, Warszawa 2010r*		
Supplementary references:	*1. Warunki Techniczne Wykonania i Odbioru Robót Budowlanych nr A5/2013. Część A: Roboty ziemne i konstrukcyjne, zeszyt 5: Konstrukcje betonowe i żelbetowe - L. Runkiewicz, Warszawa 2013 r. 2.Cooke R.: Building in the 21 st Century. Blackwell Publishing.Londyn, 2007. 3. Szwabowski J., Gołaszewski J.: Technologia betonu samozagęszczalnego. Polski Cement.Kraków 2010. Articles, papers, websites, catalogues modern formwork*		

learning outcomes	methods of assessing learning outcomes	type of class (if more than one)
EK1	evaluating the student's lecture, evaluating the student's project disscussion	L, P
EK2	evaluating the student's lecture, evaluating the student's project	L, P
EK3	written exam, part of the computing project	L, P
EK4	evaluating the student's project disscussion	P
EK5	descriptive part of the project, the project adjustment	P
EK6	descriptive part of the project	P
EK7	Discussion on the project, observation of the work in the classroom	P
EK8		

Department:	Department of Materials, Technology and Organization of Construction	Group instructors:	*mgr inż. Nina Szklennik*
Date:	06.05.2013 r.	Coordinator:	*mgr inż. Nina Szklennik*