Faculty of Civil and Environmental Engineering					
Study programme:	**Civil Engineering**		Degree level:	**Master's degree part-time programme:**	
Specialization	**KBI**		Diploma path:		
Module name:	**Theory of elasticity and plasticity**		Module ID:	**X02210kbi**	
Module type:	**obligatory**	Semester: **1**	Points ECTS [1)]	**3**	
No. of hrs in semester:	W - 10 C- 20 L- 0 P- 0 Ps- 0 S- 0				
Prerequisites:	*theoretical mechanics, strength of materials, structural mechanics*				
Aims and objectives:	Students become familiar with solving problems which concern boundary conditions of shield and plate structures. Students can learn how to describe the work of shield and plate structures according to the theory of elasticity and how to solve practical problems of elastic half space. Limit analysis of plasticity.				
Teaching methods:	Lecture - written exam, exercises – tests				
Module content:	General principles of the theory of elasticity. Analysis of stress and strain. Generalizes Hooke's Law. Differential equations of equlibrium. Solution in polar and cartesian co-ordinates. Plane stress and plane strains. Solution of two dimensional problems using Airy's stress function. in rectangular and polar co-ordinates . Classical theory of thin plates. Rectangular and circular plates. Introduction to plasticity. Limit analysis				
Learning outcomes	*student who passed the exam:*		*Relevance to the programme learning outcomes*		
EK1	Can describe the state of stress and strain, knows the linear elastic constitutive relations		K_B1_W01, K_B1_W05, K_B1_W06		
EK2	Can solve problems which concern boundary conditions of shield and plate structures		K_B1_W05, K_B1_U11		
EK3	Can describe the work of shield and plate structures according to the theory of elasticity		K_B1_W05,K_B1_U11		
EK4	Can solve practical problems of elastic half space		K_B1_W05,K_B1_U11		
EK5	Can describe general principles of the theory of plasticity and criterion of yelding		K_B1_W05,K_B1_U11		
EK6	knows how to use references.		K_B1_U23		
EK7					
EK8					

student workload	participation for lectures	10 x 1h =	10
	participation for exercises	10 x 2h =	20
	preparation for exercise	10 x 2h =	20
	homework	10 x 1h =	20
	consultations	5 x 1h =	5
	Realizacja zadań projektowych (w tym przygotowanie prezentacji)		
	preparation for and participation in exams		25
	preparation for and participation in tests		25
	work on projects, reports, etc.		
		TOTAL: [1)]	125
quantitative indicators	Student workload - activities that require direct teacher participation 10h+20h+5h+2h=37	37	ECTS [4,5)] 1,5
	Student workload - practical skills activities 20h+5h+20h+20h+25h+25h=115	115	4
basic references:	*1. Paluch M.:, Podstawy teorii sprężystości i plastyczności z przykładami, Wyd. Polit. Krakowskiej 2006 , 2. Brunarski L., Kwieciński M.: Wstęp do teorii sprężystości i plastyczności, Wyd. PW, Warszawa 1976, 3. Brunarski L., Górecki B., Runkiewicz L.: Zbiór zadań z teorii sprężystości i plastyczności, Wyd. PW, 1976,*		
supplementary references:	*1. Nowacki W.: Teoria sprężystości, PWN, Warszawa 1970, 2. Timoshenko S., Goodier J. M., Theory of elasticity, McGraw-Hill, 1969.*		

learning outcomes	methods of assessing learning outcomes	type of class (if more than one) where the outcomes are assessed
EK1	written exam (lecture)	L, Ex.
EK2	written exam (lecture), test (exercise)	L, Ex.
EK3	written exam (lecture), test (exercise)	L, Ex.
EK4	written exam (lecture), test (exercise)	L,
EK5	written exam (lecture),	L,
EK6	written exam (lecture),	L,
EK7		
EK8		

division:	Department of Structural Mechanics	Group instructors:	*dr inż. Joanna Krętowska, mgr inż. Damian Siwik*
Date:	18.01.2012	Coordinator:	*dr inż. Joanna Krętowska*