

COURSE DESCRIPTION CARD

Course name	Selected problems of dynamics in building structures				
Course type	optional	Course code	SDPB0067	ECTS credits	2
Forms and number of hours	lectures: 10 h classes: 10 h	Scientific discipline	all		
Course objectives	Knowledge: Showing the essence of the phenomenon of dynamics and dynamics of buildings. Indication of the field, scope and purposefulness of dynamic analyzes. Acquainting with the tools and methods of effective dynamic analysis, including the use of computers. Skills: Understanding the meaning, the need for their implementation and the impact of dynamic effects on building structures. Ability to perform dynamic analyzes.Ability to use computer software in the field of dynamic analyzes. Social competences: preparing a project in groups on the example of a specific task requiring dynamic analyzes.				
Course content	1. Kinds and essence of dynamic interactions in construction. 2. Methods of analysis with discrete and continuous mass distribution. 3. Interactive models. 4. Structural systems subjected to cyclic, shock and explosive loads. 5. Seismic and paraseismic interactions. 6. Ways of reducing vibrations. 7. Numerical methods in the analysis of the dynamics of building structures.Vibration damping issues				
Teaching methods	Problem lecture and discussion with the students, information lectures, multimedia presentation, subject exercises, project method,				
Assessment method	Lecture: written exam - first term; oral exam - resit date; Exercises - evaluation of projects prepared in teams in the field of application of dynamic analysis methods.				
Symbol of learning outcome	Learning outcomes		Reference to the learning outcomes for the field of study for the 8 th level of Polish Qualification Framework (PRK)	Methods of assessing the learning outcomes	
LO1	Knows and understands the essence of dynamic issues in structures. Knows and understands the methodology of scientific research in the field of dynamic analyzes.		SD_W1, SD_W2	Egzam	
LO2	Knows and understands the basic principles of knowledge transfer regarding the issues of dynamic analyzes and the development of innovations in this field to the economic sphere		SD_W2	Egzam	
LO3	Knows and is able to use knowledge in the field of building dynamics. Can communicate in terms of dynamics. Can choose appropriate strategies and tools in the field of dynamic analyzes		SD_W1, SD_W2, SD_U1	Egzam	
LO4	Analyzes the situation and prepares plans for conducting development works in the field of dynamics of building structures, including various aspects of the development of innovations in this		SD_U3, SD_K1	Exercises	

	field, and presents the results of work		
LO5	Can cooperate and organize work in a teams	SD_U4, SD_U3	Exercises

Student workload (in hours)	
Lecture / classes	10 /10
Consultations	2
The unassisted studentwork	18
Implementation of project tasks and preparation for and participation in exams/tests	20
Total	60
ECTS credits	2

Basic references	1. Collective work: Mechanics of structures with elements of a computer approach (vol. I + vol. II).Arkady, Warsaw 1984. (in the lecturer translation) 2. Leyko Jerzy: General mechanics.Dynamics.T2.PWN 2012. (in the lecturer translation)
Supplementary references	1. Rucka Magdalena: Building dynamics: with examples in MATLAB environment.WPG 2008. (in the lecturertranslation) 2. Lewandowski Roman: Dynamics of building structures.WPP 2006 (in the lecturer translation) 3. "ORCAN" software - manual available on-line kmb, pb.edu.pl/ dydaktyka/ tchyzy
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