

Title (Stability and Dynamics)	Code 1010102121010100243
Field Civil Engineering II stopień	Year / Semester 1 / 2
Specialty -	Course core
Hours Lectures: 2 Classes: 1 Laboratory: 2 Projects / seminars: -	Number of credits 6
	Language polish

Lecturer:

Prof. Roman Lewandowski
Institute of Structural Engineering
ul. Piotrowo 5
60-965 Poznań
tel. +61 6652472, fax. +61 6652059
e-mail: roman.lewandowski@put.poznan.pl

Faculty:

Faculty of Civil and Environmental Engineering
ul. Piotrowo 5
60-965 Poznań
tel. (061) 665-2413, fax. (061) 665-2444
e-mail: office_dceef@put.poznan.pl

Status of the course in the study program:

Obligatory course for students of Civil Engineering

Assumptions and objectives of the course:

The aim of this course is to acquaint students with modern methods of dynamical analyses of civil engineering structures.

Contents of the course (course description):

Equations of motion of structures treated as the discrete systems. Motion equations written in a state space. Dynamical models of chosen types of structures. Damping models. Free vibrations analysis, dynamic properties of structures with and without damping. Design sensitivity of frequencies and modes of vibration. Analysis of harmonic, steady state vibrations. The normal coordinates and their applications. The Rayleigh quotient. Computers methods of solution of eigenvalue problems. Methods of direct integration of motion equations. Dynamic analysis of block foundation. The tuned mass damper. Dynamic analysis of structures under seismic and paraseismic loads. Introduction to random vibration of structures.

Introductory courses and the required pre-knowledge:

Knowledge of the integral and differential calculation. Knowledge of the matrix analysis. Knowledge of methods of static analysis of structures

Courses form and teaching methods:

Multimedia illustrated lectures and design exercises

Form and terms of complete the course - requirements and assessment methods:

Written colloquium, evaluation of project, written and oral exam

Basic Bibliography:

Additional Bibliography: