Course code	
Type and description	EC – elective subjects from the discipline of Mechanical Engineering
ECTS credit	1
Course name	Advanced Mechanical Vibrations II
Course name in Polish	Zaawanasowane Drgania mechaniczne II
Language of instruction	English
Course level	8 PRK
Course coordinator	prof. dr hab. inż. Przemysław Perlikowski
Course instructors	dr inż. Piotr Brzeski, prof. dr hab. inż. Przemysław Perlikowski

Delivery methods and course duration

	Lecture	Tutorials	Laboratory	Project	Seminar	Other	Total of teaching hours during semester
Contact hours	0	0	0	5	0	0	5
E-learning	no	no	no	no	no	no	no
Assessment criteria (weightage)	0	0	0	100%	0	0	100%

Course objective	1. To enable students to acquire practical knowledge in the field advanced theory of vibrations 2. To enable students to design machines excited by external signal
Learning outcomes	After the course the PhD student can: 1. calculate response of systems with one and multiple degree of freedom excited by external signal – outcome W1, U1 2. model mechanical systems using Lagrange equations – outcome W1, U1 3. calculate response of nonlinear systems – outcome W1, U1
Assessment methods	Assessment methods: Outcomes 1- 3 - individual project The final grade consists of: Individual project evaluation - 100%
Prerequisites	1. Knowledge in the field of linear algebra and mathematical analysis, integral and differential calculus, basics of matrix algebra. 2. Theoretically founded general knowledge of linear and non-linear dynamics of material systems.
Course content with delivery methods	During the course PhD students solve the problem, given by the teacher, which has a character of scientific research. This problem is associated with vibrating systems. During this course PhD students perform numerical simulations using computational models using advanced computing software or carry out experimental studies and collect and describe their results and formulate conclusions.
	1) Rao, S. S., Mechanical Vibrations, Prentice-Hall (any edition) 2) Den Hartog, J. P., Mechanical Vibrations, Courier Corporation (any edition)

	3) Leonard Meirovitch, Fundamentals of Vibrations, McGrawHill (any edition)
Other reference materials	1) Thomsen, J., Vibrations and Stability, Springer, 2003 2) Awrejcewicz J. Classical Mechanics. Dynamics. Springer, 2012
Average student workload outside classroom	20h
Comments	
Last update	July 2020