STUDY MODULE DESCRIPTION FORM

Name of the module/subject **Machine Dynamics**		Code **1010642111010640327**
Field of study **Mechanical Engineering**	Profile of study (general academic, practical) **(brak)**	Year /Semester **1 / 1**
Elective path/specialty **Mechatronics**	Subject offered in: **Polish**	Course (compulsory, elective) **obligatory**
Cycle of study: **Second-cycle studies**	Form of study (full-time,part-time) **full-time**	
No. of hours Lecture: **2** Classes: **1** Laboratory: **-** Project/seminars: **-**		No. of credits **3**
Status of the course in the study program (Basic, major, other) **(brak)**	(university-wide, from another field) **(brak)**	
Education areas and fields of science and art **technical sciences**		ECTS distribution (number and %) **3 100%**

Responsible for subject / lecturer:

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Responsible for subject / lecturer:

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Prerequisites in terms of knowledge, skills and social competencies:

1	**Knowledge**	Learned knowledge of mathematics, mechanics (course of the first degree).
2	**Skills**	Using basic laws of physics to solve simple problems of kinematics and dynamics.
3	**Social competencies**	Creative and consistent in carrying out the tasks

Assumptions and objectives of the course:

-Understanding the theoretical and practical dynamics of machines for use in the process of self-resolving some mechanical problems.

Study outcomes and reference to the educational results for a field of study

Knowledge:

1. It has expanded knowledge of the issues of dynamics and mechanical vibration of machinery. - [K2A_W02]

Skills:

1. Determination of the mass forces and the forces of resistance mechanisms and the selection of the driving forces in the drive parts. - [K2A_U07]
2. The formulation of the equations of motion of selected mechanical systems. - [K2A_U14]

Social competencies:

1. Understands the need for lifelong learning; is able to inspire and organize the learning process of others. - [K2A_K01]
2. Is aware of and understands the importance and impact of non-technical aspects of mechanical engineering activities and its impact on the environment, is aware of responsibility for decisions - [K2A_K02]
3. Is able to think and act in an entrepreneurial manner - [K2A_K05]
4. Is aware of social role of mechanical engineer, understands the need for and is able to deliver opinions and knowledge in the field of machine design, particularly through the media - [K2A_K06]

Assessment methods of study outcomes

-The written examination, written tests on exercises.

Course description

-The place and role of the dynamics of machines in engineering education. Classical dynamics problems, issues of differential and integral. Determination of the mass forces in the mechanisms, force of balance in the drive parts. Energy equation and mechanical efficiency of machines. The movement of the machine under the action of forces, the equation of motion and the methods of formulating them. Vibration of machines and structures. Selected issues: dynamic braking, the dynamics of the vehicle's suspension.

Basic bibliography:

1. R. H. Cannon jr.; Dynamika układów fizycznych, WNT, Warszawa 1973
2. Z. Parszewski; Drgania i dynamika maszyn, WNT, Warszawa 1982

Additional bibliography:

1. R. Scanlan, R. Rosenbaum; Drgania i flatter samolotów, PWN, Warszawa 1964
2. S. Wiśniewski; Dynamika maszyn, Wyd. Politechniki Poznańskiej

Result of average student's workload

Activity	Time (working hours)
1. Participation in the lecture	30
2. Strengthening the lecture	5
3. Consultations	2
4. Exam Preparation	10
5. Participation in the exam	2
6. Prepare for exercises	5
7. Participation in the exercises	15
8. Repeating the exercise of Contents	5
9. Consultations	2
10. Prepare for test	5
11. Participation in the test	2

Student’s workload

Source of workload	hours	ECTS
Total workload	83	3
Contact hours	53	2
Practical activities	0	0