



COURSE DESCRIPTION CARD - SYLLABUS

Course name

Bearings of Rotor Machines

Course

Field of study

Year/Semester

Transport

4/7

Area of study (specialization)

Profile of study

Engineering of Pipeline Transport

general academic

Level of study

Course offered in

First-cycle studies

Polish

Form of study

Requirements

full-time

elective

Number of hours

Lecture

Laboratory classes

Other (e.g. online)

30

15

0

Tutorials

Projects/seminars

0

0

Number of credit points

4

Lecturers

Responsible for the course/lecturer:

dr hab. inż. Michał Libera

Responsible for the course/lecturer:

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Prerequisites

The student has basic knowledge of machine building, can independently use various sources of information, also in foreign languages. Competences in the field of interpersonal communication.

Course objective

Presentation of the basic issues related to the bearing of rotating machinery. Describing the structure, operating principles and principles of selecting rolling and sliding bearings.

Course-related learning outcomes

Knowledge

The student has an ordered, theoretically founded general knowledge of technology, transport systems and various means of transport



The student has knowledge of important development trends and the most important technical achievements and of other related scientific disciplines, in particular transport engineering

Skills

The student is able to obtain information from various sources, including literature and databases (both in Polish and in English), integrate it properly, interpret it and critically evaluate it, draw conclusions, and comprehensively justify his/her opinion.

Student is able, when formulating and solving tasks in the field of transport, to apply appropriately selected methods, including analytical, simulation or experimental methods

Student is able to make a critical analysis of the functioning of transport systems and other technical solutions and to evaluate these solutions, including: is able to effectively participate in the technical inspection and assess the transport task from the point of view of non-functional requirements, has the ability to systematically conduct functional tests

Social competences

The student is aware of the importance of knowledge in solving engineering problems, knows examples and understands the causes of malfunctioning transport systems that have led to serious financial and social losses or to serious loss of health and even life

The student is aware of the social role of a technical university graduate, in particular, he/she understands the need to formulate and transfer to the society, in an appropriate style, information and opinions on engineering activities, technological achievements, as well as the achievements and traditions of the transport engineer profession

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Lecture - written exam. Obtaining credit from a minimum of 51% of the points possible to get. There is a possibility of an oral question to raise the grade.

Programme content

Construction of rotating machines with the specificity of their bearings. Criteria for selecting the method of selecting the type of bearing in selected rotor machines. Breakdown of rolling bearings. Rules for the selection of rolling bearings. Operating problems of rolling bearings. Construction and operation principle of slide bearings. Rules for the selection of plain bearings. Operating problems of slide bearings.

Teaching methods

Informative (conventional) lecture (information transfer in a structured way)

Bibliography

Basic

1. Hung Nguyen-Schäfer, Computational Design of Rolling Bearings, Springer 2016



2. Ming Qiu Long Chen Yingchun Li Jiafei Yan, Bearing Tribology, Springer 2017
3. Czolczynski Krzysztof, Rotordynamics of Gas-Lubricated Journal Bearing Systems, Springer 1999
4. Burton Ralph A., Heat, Bearings, and Lubrication, Springer 2000
5. Smith D. M., Journal Bearings in Turbomachinery, Springer 1969
6. Magnucki Krzysztof, Podstawy konstrukcji maszyn, Wydawnictwo Politechniki Poznańskiej, 2008
7. Maluśkiewicz Piotr, Podstawy konstrukcji maszyn dla studentów kierunków niemechanicznych, Wydawnictwo Politechniki Poznańskiej, 2009
8. Bearing: auxiliary materials from the basics of machine construction. Vol. 1, Bearings tocze / Jerzy Białkowski [et al.]; University of Engineering in Koszalin. University Publishing House of the College of Engineering, 1986.

Additional

1. Krzymień A. Łożyska mechanizmu korbowego tłokowych silników spalinowych Wydawnictwo Politechniki Poznańskiej, Poznań 2007

Breakdown of average student's workload

	Hours	ECTS
Total workload	90	4,0
Classes requiring direct contact with the teacher	45	2,0
Student's own work (literature studies, preparation for laboratory classes/tutorials, preparation for tests/exam, project preparation) ¹	45	2,0

¹ delete or add other activities as appropriate