

STUDY MODULE DESCRIPTION FORM		
Name of the module/subject Bearings of Rotor Machines		Code 1010631361010622831
Field of study Transport	Profile of study (general academic, practical) (brak)	Year /Semester 3 / 6
Elective path/specialty Engineering of Pipeline Transport	Subject offered in: Polish	Course (compulsory, elective) obligatory
Cycle of study: First-cycle studies	Form of study (full-time, part-time) full-time	
No. of hours Lecture: 2 Classes: - Laboratory: - Project/seminars: -		No. of credits 1
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		ECTS distribution (number and %)
Responsible for subject / lecturer: dr inż. Jarosław Kałużny email: jaroslaw.kaluzny@put.poznan.pl tel. +4861 665-2705 Faculty of Working Machines and Transportation ul. Piotrowo 3 60-965 Poznań		Responsible for subject / lecturer: dr inż. Michał Libera email: michal.libera@put.poznan.pl tel. +4861 665-2223 Faculty of Working Machines and Transportation ul. Piotrowo 3 60-965 Poznań
Prerequisites in terms of knowledge, skills and social competencies:		
1	Knowledge	The student has knowledge of the basics of machine design. The student has a basic knowledge of mathematical analysis.
2	Skills	The student is able to analyze and synthesize information, draw conclusions, formulate and justify opinions
3	Social competencies	Student demonstrates the elementary social skills appropriate to the location and situation
Assumptions and objectives of the course: understanding the structure and operation of bearings of rotor machines in connection with the problems of friction and lubrication		
Study outcomes and reference to the educational results for a field of study		
Knowledge:		
1. Knows the structure and classification of bearings, understand the differences in the structure and properties of the bearing. - [-] 2. Knows various areas of their applications of bearings. - [-] 3. He knows a theories of friction and lubrication of bearings - [-] 4. He knows the basic equations of fluid mechanics applied to the oil film. - [-] 5. He knows forms of damage to the bearings and methods of diagnosis - [-] 6. It has a basic knowledge of the factors affecting the design of the bearings and bearing units - [-]		
Skills:		
1. He can organize a rational exploitation of bearing rotor machines - [-] 2. He can choose the type of bearings appropriate to the conditions of work - [-] 3. He can design a simple bearings - [-]		
Social competencies:		
1. The student is aware of the impact bearing on safety, reliability and efficiency of rotating machinery - [-] 2. Able to independently develop their knowledge of bearings of rotating machinery - [-]		
Assessment methods of study outcomes		

Discussions during lecture Test and personal interview, the essence of which is to check the understanding of the substance of the issues described in the contents of the program		
Course description		
540/5000 The importance of machine bearings in technology Types of bearings Friction and lubrication Hydrodynamic lubrication theory Examples of calculation of plain bearings Piston engine as an example of friction nodes Introduction to the problem of rolling bearings Construction and classification of rolling bearings Forms of rolling bearing damage and bearing diagnostics Factors influencing the surface fatigue life of rolling bearings Lubrication of rolling bearings Selection procedure for rolling bearings Examples of the use of rolling bearings in rotor machines		
Basic bibliography: 1. Barwell F.T.: Łożyskowanie. Wydawnictwo Naukowo-Techniczne, Warszawa 1984 2. Krzemiński-Freda H.: Łożyska toczne PWN, Warszawa 1989 3. Katalogi łożysk tocznych 4. Iskra A. Parametry filmu olejowego w węzłach mechanizmu tłokowo-korbowego silnika spalinowego Wydawnictwo Politechniki Poznańskiej, Poznań 2001		
Additional bibliography: 1. Gosiewski Z.: Łożyskowanie magnetyczne dla maszyn wirnikowych. Podstawy Teoretyczne. Cz. 1 Monografie 33, Koszalin 1993 2. Waligóra W.: Rozrzut powierzchniowej trwałości zmęczeniowej łożysk tocznych. Wydawnictwo Politechniki Poznańskiej, Poznań 2002 3. Gibczyńska T., Pytko S.: Łożyska toczne wieńcowe. AGH, Uczelniane Wydawnictwa Naukowo-Dydaktyczne, Kraków 1999. 4. Kazimierski Z., Krysiński J.: Łożyskowanie gazowe i napędy mikro turbinowe. WNT, Warszawa 1981 5. Krzymień A. Łożyska mechanizmu korbowego tłokowych silników spalinowych Wydawnictwo Politechniki Poznańskiej, Poznań 2007 6. Zimbardo P, Psychology and Life, 13th Edition, Allyn and Bacon, Boston, Massachusetts, USA, 1992, tłumaczenie polskie PWN		
Result of average student's workload		
Activity	Time (working hours)	
1. Participation for the lectures	30	
2. consolidation of the lecture	5	
3. consultation	5	
4. prepare for the exam	7	
5. Exam	3	
Student's workload		
Source of workload	hours	ECTS
Total workload	50	1
Contact hours	58	1

Practical activities	0	0
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