

<b>STUDY MODULE DESCRIPTION FORM</b>		
Name of the module/subject <b>Logistics of technical systems exploitation</b>		Code <b>1011101471011133001</b>
Field of study <b>Logistics - Full-time studies - First-cycle studies</b>	Profile of study (general academic, practical) <b>(brak)</b>	Year /Semester <b>4 / 7</b>
Elective path/specialty <b>-</b>	Subject offered in: <b>Polish</b>	Course (compulsory, elective) <b>obligatory</b>
Cycle of study: <b>First-cycle studies</b>	Form of study (full-time, part-time) <b>full-time</b>	
No. of hours Lecture: <b>15</b> Classes: <b>-</b> Laboratory: <b>-</b> Project/seminars: <b>15</b>		No. of credits <b>4</b>
Status of the course in the study program (Basic, major, other) <b>(brak)</b>		(university-wide, from another field) <b>(brak)</b>
Education areas and fields of science and art		ECTS distribution (number and %)
<b>Responsible for subject / lecturer:</b>  dr hab. inż. Józef Fraś, prof. nadzw. email: jozef.fras@put.poznan.pl tel. 61 6653417 Faculty of Engineering Management ul. Strzelecka 11 60-965 Poznań		
<b>Prerequisites in terms of knowledge, skills and social competencies:</b>		
1	<b>Knowledge</b>	The student knows the basics of production management and logistics management
2	<b>Skills</b>	The student has the skills of planning and scheduling tasks
3	<b>Social competencies</b>	The student is aware of the impact of maintenance and repair system on the competitiveness of enterprises
<b>Assumptions and objectives of the course:</b> -Presentation the idea of logistics of exploitation, understanding the principles of selection of machines in the aspect of durability, reliability and requirements for technical support. Understanding the principles of the functioning of the maintenance care systems, the choice of systems of care for the groups of machinery. Mastering the skill of organize a system of materials management in maintenance and repair. The ability to plan maintenance and repair work and the need for spare parts and materials for service		
<b>Study outcomes and reference to the educational results for a field of study</b>		
<b>Knowledge:</b>		
1. The student explains the concept of sustainability and reliability of the machines - [K1A_W05] 2. The student characterized the impact of design features on the machine - [K1A_W07] 3. The student explains how to exploitation impact on the sustainability and reliability of the machines - [K1A_W14] 4. The student characterized basic concepts: the lead time, repair cycle, the period between inspections - [K1A_W15] 5. The student explains the course of the wear process - [K1A_W16] 6. The student characterized specific concepts such as: TBO (time between overhauls), dispersion of durability, susceptibility on repair - [K1A_W17] 7. The student explains the selected factors of choice machines (in the terms of maintenance requirements) - [K1A_W18] 8. The student describes the evolution of systems of care for machinery equipment - [K1A_W19] 9. The student characterized chosen methods of care of the machinery equipment - [K1A_W20, InzA_W05] 10. Student explains the types and structure of maintenance cycles - [K1A_W21] 11. The student explains the types of maintenance and repair work - [K1A_W23]		
<b>Skills:</b>		

1. Students can prepare a presentation of the developed project of logistics system - [K1A_U2] 2. Students can self-developed facultative task for designed maintenance system - [K1A_U1, K1A_U5] 3. The student is able to schedule repair and maintenance works - [K1A_U9] 4. The student is able to apply quantitative methods in material requirements planning - [K1A_12] 5. Students can evaluate the chosen system of spare part replenishment - [K1A_13] 6. Students can design a maintenance and repair planning system on the basis of repair normative - [K1A_U16]
<b>Social competencies:</b>
1. The student is willing to cooperate and work in a project group - [K1A_K03] 2. The student is aware of their responsibility for their own work and the willingness to subordinate with the rules of teamwork and take responsibility in the group of project - [K2A_K04] 3. The student is aware of the need to choose effective methods of maintenance and their impact on competitiveness and entrepreneurship - [K2A_K06]

<b>Assessment methods of study outcomes</b>		
Formative assessment: a) For the project: on the basis of progress in the implementation stages of the project, and knowledge of the issues necessary to carry b) for the lecture: on the basis of answers to questions about the topics covered in previous lectures Recapitulative assessment: a) For the project: on the basis of (1) the quality of the project (2) answers to questions about the project b) for the lecture: on the basis of exam - written work on the issues discussed during the lecture. The exam can be applied after obtaining the ratings of the project and the laboratory. The exam is passed, after giving the correct answers to most questions		
<b>Course description</b>		
--Lecture: Introduction to the area, basic terms and ideas. Factors for selection of machinery and equipment (repair susceptibility). Documentation of equipment used in the maintenance and repair. Types and characteristics of maintenance and repair work. Classical systems of care for machinery. TPM - Total Productive Maintenance. RCM - Reliability Centered Maintenance. The allocation of work to maintain and repair. Inventory management to maintain and repair of machines. Project: Construction of logistics subsystem for the maintenance and repair of machines. Time horizons maintenance planning functions. Repair cycles in relation to maintenance planning. Maintenance planning and the need for capacity. Logistics supply of spare parts for repairs. Classification of the causes of failure. The choice of systems of care, the use of analysis of ABC / XYZ to manage the maintenance system.		
<b>Basic bibliography:</b>		
1. Legutko S., Eksploatacja maszyn, Wydawnictwo Politechniki Poznańskiej, Poznań 2007 2. Frańś J. Normalizacja i zarządzanie jakością w logistyce, Wydawnictwo Naukowe Ploitechniki Poznańskiej, Poznań 2015 3. Hadaś Ł., Logistyka eksploatacji systemów technicznych, Materiały wykładowe niepublikowane, Politechnika Poznańska, 2010		
<b>Additional bibliography:</b>		
1. . Hirano Hiroyuki, JIT Factory Revolution, Productivity Press, Portland, Oregon, 1988. 2. Lis. S., Organizacja i ekonomika procesów produkcyjnych w przemyśle maszynowym, PWN, Warszawa, 1984. 3. . Moubrey J., Maintenance Management ? A New Paradigm, Maintenance 11, 1996 4. Frańś J., Kompleksowe zarządzanie jakością w logistyce, Wydawnictwo Naukowe Instytutu Technologii Eksploatacji w Radomiu, Radom 2013		
<b>Result of average student's workload</b>		
Activity	Time (working hours)	
1. Lecture	15	
2. Project	15	
3. Consultations	20	
4. Own study/work	35	
5. Prepare to pass the course	15	
<b>Student's workload</b>		
Source of workload	hours	ECTS
Total workload	100	4
Contact hours	50	2
Practical activities	50	2

