

STUDY MODULE DESCRIPTION FORM		
Name of the module/subject Exploitation of Technical Means of Transport		Code 1010604131010610379
Field of study Aerospace Engineering	Profile of study (general academic, practical) general academic	Year /Semester 2 / 3
Elective path/specialty Aircraft Transport	Subject offered in: Polish	Course (compulsory, elective) obligatory
Cycle of study: First-cycle studies	Form of study (full-time, part-time) part-time	
No. of hours Lecture: 9 Classes: 9 Laboratory: - Project/seminars: -		No. of credits 2
Status of the course in the study program (Basic, major, other) other		(university-wide, from another field) university-wide
Education areas and fields of science and art		ECTS distribution (number and %)
Responsible for subject / lecturer: dr hab. inż. Michał Libera email: michal.libera@put.poznan.pl tel. +4861 665-2223 Faculty of Transport Engineering ul. Piotrowo 3 60-965 Poznań		
Prerequisites in terms of knowledge, skills and social competencies:		
1	Knowledge	The student has a basic knowledge of the means of transport and operation of their components
2	Skills	The student is able to analyze and synthesize information, draw conclusions, formulate and justify opinions
3	Social competencies	The student is aware of the importance of maintenance and service in the life cycle of the object
Assumptions and objectives of the course: Acquiring the ability to formulate and solve simple problems of operation (operation and maintenance) means of transport		
Study outcomes and reference to the educational results for a field of study		
Knowledge:		
1. He knows the concept of exploitation, maintenance, operation, failure, durability, reliability, limit state - [T1A_W06] 2. He knows the typical patterns of changes in the technical state - [T1A_W06] 3. He knows the issues of unfitness functional and error handling - [T1A_W06] 4. It has a basic knowledge of handling the operational and correction, periodic reviews and testing of State - [T1A_W06] 5. Knows basic strategies of technical services, operating schedules, operating levels - [T1A_W06]		
Skills:		
1. He can create a statistical description of the state changes in the operational - [T1A_U04] 2. He can analyze the data assuming the Weibull distribution (graphical method and analytical) - [T1A_U04] 3. He can identify the types, causes and consequences of failures - [T1A_U04]		
Social competencies:		
1. The student is aware of the importance of the rational use of means of transport in the aspects: technical, security, economic and ecological - [T1A_U04]		
Assessment methods of study outcomes		
The audit work, which allow the assessment of the skills acquired by the student in the analysis of operational data. Test and personal interview, the essence of which is to check the understanding of the substance of the issues the technical operation of the means of transport as described in the contents of the program.		

Course description		
<p>1) Operation Support Technical state: the parameter value - tolerance, load - bearing capacity, quality - standard (reference). The useful life between the damage.</p> <p>2) Changes in the state of technical Typical waveforms changes . Technical criteria for the technical condition</p> <p>3) Statistical description of changes in the operational Numerical characteristics of the random variable . Functional characterization of the random variable</p> <p>4) Evaluation of the potential equipment and process Determination of the tolerance limits . Random changes in load and capacity. Factor of safety and security of supply</p> <p>5) Analysis of data Analysis of the data assuming the Weibull distribution (graphical method and analytical method) . Evaluation of an average period between damage and preparedness</p> <p>6) Analysis of the types , causes and consequences of disablement Unfitness functional . Errors use</p> <p>7) Handling Handling operational and correction . Periodic reviews and audits of state. The technical services : Strategies for handling, operating schedules , operating levels</p>		
Basic bibliography:		
<p>1. Gronowicz J.: Eksploatacja techniczna i utrzymanie samochodów. Wydawnictwo Uczelniane Politechniki Szczecińskiej, Szczecin 1997</p> <p>2. Hebda M.: Eksploatacja samochodów. Wydawnictwo Instytutu Technologii Eksploatacji, Radom 2005</p> <p>3. Smalko Z.: Podstawy eksploatacji technicznej pojazdów. Warszawa, Wydawnictwo Politechniki Warszawskiej, 1987</p>		
Additional bibliography:		
<p>1. Macha E.: Reliability of machines. Wydawnictwo Politechniki Opolskiej, Opole 2001</p> <p>2. Gołąbek A.: Eksploatacja i niezawodność maszyn. Wrocław, Wyd. Politechniki Wrocławskiej, 1988</p> <p>3. Niziński S.: Eksploatacja obiektów technicznych. Wyd. ITeE, Radom, 2002</p>		
Result of average student's workload		
Activity	Time (working hours)	
1. Participation in lectures and exercises	30	
2. Remember the content of the courses	8	
3. Consultation	2	
4. Exam Preparation	7	
5. Participation in the exam	3	
Student's workload		
Source of workload	hours	ECTS
Total workload	50	2
Contact hours	35	1
Practical activities	0	0