

<b>STUDY MODULE DESCRIPTION FORM</b>		
Name of the module/subject <b>Exploitation of Technical Means of Transport</b>		Code <b>1010601131010610379</b>
Field of study <b>Aerospace Engineering</b>	Profile of study (general academic, practical) <b>general academic</b>	Year /Semester <b>2 / 3</b>
Elective path/specialty <b>Aircraft Transport</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>1</b> Classes: <b>1</b> Laboratory: <b>-</b> Project/seminars: <b>-</b>		No. of credits <b>2</b>
Status of the course in the study program (Basic, major, other) <b>other</b>		(university-wide, from another field) <b>university-wide</b>
Education areas and fields of science and art		ECTS distribution (number and %)
<b>Responsible for subject / lecturer:</b>  dr hab. inż. Michał Libera email: <a href="mailto:michal.libera@put.poznan.pl">michal.libera@put.poznan.pl</a> tel. +4861 665-2223 Faculty of Transport Engineering ul. Piotrowo 3 60-965 Poznań		
<b>Prerequisites in terms of knowledge, skills and social competencies:</b>		
1	<b>Knowledge</b>	The student has a basic knowledge of the means of transport and operation of their components
2	<b>Skills</b>	The student is able to analyze and synthesize information, draw conclusions, formulate and justify opinions
3	<b>Social competencies</b>	The student is aware of the importance of maintenance and service in the life cycle of the object
<b>Assumptions and objectives of the course:</b> Acquiring the ability to formulate and solve simple problems of operation (operation and maintenance) means of transport		
<b>Study outcomes and reference to the educational results for a field of study</b>		
<b>Knowledge:</b>		
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]		
<b>Skills:</b>		
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]		
<b>Social competencies:</b>		
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]		
<b>Assessment methods of study outcomes</b>		
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.		

<b>Course description</b>		
<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>		
<b>Basic bibliography:</b>		
<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>		
<b>Additional bibliography:</b>		
<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>		
<b>Result of average student's workload</b>		
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	
<b>Student's workload</b>		
Source of workload	hours	ECTS
Total workload	50	2
Contact hours	35	1
Practical activities	0	0