

**Information sheet for the course**  
**Reliability and Diagnostics special mobile equipment**

<b>University:</b> <i>Alexander Dubček University of Trenčín</i>	
<b>Faculty:</b> <i>Faculty of special technology</i>	
<b>Course unit code:</b> <i>UŠMT/I/2-24/d</i>	<b>Course unit title:</b> <i>Reliability and Diagnostics special mobile equipment</i>
<b>Type of course unit:</b> <i>compulsory</i>	
<b>Planned types, learning activities and teaching methods:</b>	
<b>Number of credits:</b> <i>1</i>	
<b>Recommended semester:</b> <i>4<sup>st</sup> semester in the 2<sup>nd</sup> year (full-time)</i> <i>6<sup>th</sup> semester in the 3<sup>rd</sup> year (part-time)</i>	
<b>Degree of study:</b> <i>II. (engineer)</i>	
<b>Course prerequisites:</b> <i>UŠMT/I/2-20/d Reliability of machinery and equipment, UŠMT/I/2-23/d Diagnosis of machinery and equipment, UŠMT/I/1-47/d Measuring and testing equipment</i>	
<b>Assessment methods:</b> <i>Prerequisites Completed state examinations. Handing over of the thesis with the terms in time.</i>	
<b>Learning outcomes of the course unit:</b> <i>Verification of autonomy and professional expertise in the field of theoretical use procedures, methods and means of the support of knowledge for solving problems of operational reliability, diagnostics, measurement and testing techniques in the field of knowledge SB maintenance of machinery and equipment for the second stage of study.</i>	
<b>Course contents:</b> <i>Reliability of machinery and equipment - Purpose and use of analysis of reliability throughout the life cycle. Specification requirements for reliability, utilization analysis reliability. Expression of object structure and application of probability theory and mathematical statistics. Stochastic properties monitored variables and indicators of performance. Reliability and indicators expentable and restored system. Characteristics Maintainability reparability, diagnostikovateľnosti, security maintenance, availability, durability and shelf life. Selected stochastic reliability analysis methods. Calculation of disorders of the data (PC). Truth table. The inspection method. Reliability Block Diagram (RBD - Reliability Block Diagram). Critical sections and successful journey. Fault tree (FTA - Fault Tree Analysis), event tree (ETA) analytes causes and consequences of failure of FMEA, FMECA, interference theory of reliability cost optimization, simulation analysis methods reliability. Diagnosis of machinery - Basic principles of technical diagnostics. Diagnostic systems, models of objects. Recognition in the diagnosis. Methods, organization and resources of technical diagnostics. Physical methods of technical diagnostics, noise, acoustic emission, vibration, temperature, tribotechnical methods of non-destructive methods. Applications technical diagnostics of special mobile equipment, automobiles and machinery. Diagnosis of engine, transmission and chassis, diagnosis groups, subgroups and components. Diagnostic performance parameters of Troy, the clearances in the mechanisms, tightness and workspaces. Parallel and serial diagnostics of electrical and electronic systems. Measuring and testing equipment - Measuring and testing equipment in accordance with applicable legal standards. Use of technical diagnostics methods in special and mobile technology. The concept experiment and methods of processing the results. Measuring chains, methods of testing techniques. Characteristic elements of the measurement chain and analyze the principles of measuring and testing equipment. Sensors and sensor technology. Methods of measuring, testing, measuring, registration and evaluation instruments and apparatus. Special types of tests, tests under extreme climatic conditions. Principles of safety tests on test equipment.</i>	
<b>Recommended of required reading:</b> <i>CHOVANEK, A.: Simulačné modelovanie procesov zabezpečenia spoľahlivosti špeciálnej techniky. Trenčianska univerzita A. Dubčeka v Trenčíne. Trenčín 2006. 100s. ISBN 80-8075-147-1</i> <i>LIPTÁK, P., STODOLA, J.: Spoľahlivosť strojov a zariadení určených pre špeciálnu techniku. TUAD Trenčín, 2009. ISBN 978-80-8075-418-1</i>	

JAMRICOVÁ, Z., STODOLA, J., STODOLA, P. Diagnostika strojov a zariadení. Vydavateľstvo EDIS, Žilina 2011. ISBN 978-80-554-0385-4.

JOZEFEK, M., LIPTÁK, P.: Meranie a skúšanie špeciálnej techniky. Trenčín, TnU AD v Trenčíne, 2005. ISBN 80-8075-097-1.

**Language:** Slovak

**Remarks:**

Subject State Examination

**Evaluation history:**

Total number of students being evaluated:

A	B	C	D	E	FX

**Lecturers:** prof. Ing. Jiří Stodola, DrSc. prof. Ing. Alexej Chovanec, CSc., asoc.prof. Ing. Zuzana Jamrichová, PhD., CSc., Ing. Alena Breznická, PhD., Ing. Andrej Lysák, PhD., Ing. Ivan Kopecký, PhD.

**Last modification:** 15.4.2014

**Supervisor:** prof. Ing. Alexej Chovanec, CSc., guarantee of the study program „Maintenance and Repair of Special Mobile Technology“.