Written exam, pass-fail test

Name		STUDY MODULE	DESCRIPTION FORM			
	f the module/subject	Diagnostics		Code 1010604251010600221		
Field of study			Profile of study	Year /Semester		
Transport			(general academic, practical) (brak)	3/5		
Elective path/specialty			Subject offered in:	Course (compulsory, elective		
<u> </u>			Polish	obligatory		
Cycle of study: First-cycle studies			Form of study (full-time,part-time)			
			part-time			
No. of h				No. of credits		
Lectur	0.0000		Project/seminars: - 3			
Status of the course in the study program (Basic, major, other) (brak)			(university-wide, from another field) (brak)			
Education	on areas and fields of sci	ience and art	•	ECTS distribution (number		
				and %)		
tecnr	nical sciences			100 3%		
Resp	onsible for subj	ect / lecturer:	Responsible for subject	et / lecturer:		
Prof. Franciszek Tomaszewski, DSc., DEng.			Bartosz Czechyra, DEng.	•		
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	+48 61 665 25 70 ulty of Working Machi	nes and Transportation		tel. +48 61 665 20 23 Faculty of Working Machines and Transportation		
Faculty of Working Machines and Transportation Piotrowo 3 street, 60-965 Poznan			Piotrowo 3 street, 60-965 Poznan			
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	equisites in term	ns of knowledge, skills a	and social competencies:			
	equisites in term		and social competencies:	niques and modeling.		
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Faculty of Working Machines and Transportation

Course description

Term diagnostics, diagnostics as measurement method, conditions of diagnosing technical objects. The essence of technical diagnostics, tasks and aims of technical diagnostics.

Term entropy in diagnostics, characteristics of entropy, relevant entropy. Phases of object existence, diagnostics in particular phases of object existence. Diagnostics in the system of operational use of vehicles, diagnostics in usage and service subsystem. Diagnostic system. The analysis of diagnosed object, diagnostic objects (determined and non-determined), set of characteristics of object condition, set of preliminary parameters (operational and accompanying).

Object structure versus diagnostic signal, term structure, structure parameters describing object condition. Requirements of preliminary parameters to be defined as diagnostic parameter. Diagnostic parameters and and their classification. Symptoms of technical condition. Terms critical value and acceptable value of symptoms, methods of assessing critical values. Classification of technical conditions of objects, two-, three- and four-state classification.

Classification of condition diagnostic parameters, general and specific parameters. Diagnosing methods, method of information synthesis, method of information analysis. Methods of diagnosing vehicles, methods with and without instruments. Operation scope of technical diagnostics, diagnosing current condition, monitoring object condition, finding origin of existing (past) conditions, prognosticating future conditions. Diagnostic experiments, passive experiment, active-passive experiment, passive-reliability experiment. Diagnostic susceptibility of vehicles. Effectiveness of using diagnostics in operational use of vehicles. Methodology of diagnostic tests.

Basic bibliography:

- 1. Cempel C., Tomaszewski F., Diagnostyka Maszyn. Zasady ogólne, przykłady zastosowań. Instytut Technologii Eksploatacji, Radom 1992.
- 2. Marciniak J., Diagnostyka techniczna kolejowych pojazdów szynowych. WKiŁ, Warszawa 1982.
- 3. Żółtowski B., Podstawy diagnostyki maszyn. Wydawnictwo Uczelniane Akademii Techniczno-Rolniczej, Bydgoszcz 1996.

Additional bibliography:

- 1. Niziński S., Elementy diagnostyki obiektów technicznych. Wydawnictwo Uniwersytetu Warmińsko-Mazurskiego, Olsztyn 2001.
- 2. Niziński S., Diagnostyka samochodów osobowych i ciężarowych. Dom Wydawniczy Bellona, Warszawa 1999.
- 3. Żółtowski B., Cempel C., Inżynieria diagnostyki maszyn. Instytut Technologii Eksploatacji, Radom 2004.

Result of average student's workload

Activity	Time (working hours)
1. Preparation to the lecture	1
2. Participation in the lecture	30
3. Consolidation of the lecture content	4
4. Consultation about lecture	1
5. Preparation to the exam	5
6. Participation in the exam	1
7. Preparation to the classes	4
8. Participation in the classes	15
9. Consolidation of the classes content	4
10. Consultation about the classes	1
11. Preparation to pass-fail test	5
12. Participation in pass-fail test	1

Student's workload

Source of workload	hours	ECTS
Total workload	82	3
Contact hours	49	2
Practical activities	0	0