COURSE DESCRIPTION CARD - SYLLABUS

Course name
Experimental Research in Transport [S2Trans1-TrSz>BEwT]

Course

Field of study
Transport

Year/Semester
1/1

Area of study (specialization)
Railway Transport

Profile of study
general academic

Level of study
second-cycle

Course offered in
Polish

Form of study
full-time

Requirements
compulsory

Number of hours

Lecture
30

Laboratory classes
0

Other
0

Tutorials
15

Projects/seminars
0

Number of credit points

3,00

Coordinators

dr hab. inż. Grzegorz Szymański prof. PP
grzegorz.m.szymanski@put.poznan.pl

Lecturers

Prerequisites

The student has a basic knowledge of the techniques of measuring mechanical quantities and basic knowledge of modeling. The student is able to solve specific problems appearing in technical systems. The student is able to work in a group, taking different roles in it. The student is able to determine the priorities important in solving the tasks set before him.

Course objective

Learning methods and acquiring practical skills to solve tasks in the field of empirical research in rail transport.

Course-related learning outcomes

Knowledge:
Student has advanced and detailed knowledge of the processes occurring in the life cycle of transport systems
Student knows advanced methods, techniques and tools used in solving complex engineering tasks and conducting research in a selected area of transport

Skills:
Student is able to plan and conduct experiments, including measurements and simulations, interpret the obtained results and draw conclusions as well as formulate and verify hypotheses related to complex engineering problems and simple research problems

Social competences:
Student understands the importance of using the latest knowledge in the field of transport engineering in solving research and practical problems

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Learning outcomes presented above are verified as follows:
The knowledge acquired during the lecture is verified by a 45-minute colloquium during the 7th lecture. Kolokwim consists of questions (test and open), with different scores. Passing threshold: 50% of points.

Programme content

Methodology of experimental research. Methods of planning scientific experiments. Methodology of measurement of mechanical quantities.

Course topics

Methodology of experimental research. Planning the experiment in the research of the dynamics of vehicles carried out in normal operating conditions. Fundamentals of measurements of mechanical quantities. Analog-to-digital conversion. Structured data-flow programming in the LabView® environment. Multidimensional analysis of data from the experiment.

Teaching methods

1. Lecture: multimedia presentation, illustrated with examples given on the board.
2. Laboratory exercises: a multimedia presentation, a presentation illustrated with examples given on the blackboard and the implementation of tasks given by the teacher - practical exercises.

Bibliography

Basic
1. Marven C., Ewers G., Zarys cyfrowego przetwarzania sygnałów. WKŁ, Warszawa 1996.
2. Tłaczała W., Środowisko LabView w eksperymencie wspomaganym komputerowo. WNT, Warszawa 2002.
Additional
www.ni.com
www.wobit.com.pl
www.kistler.com
www.bksv.com
www.endevco.com
www.skf.com

Breakdown of average student's workload

	Hours	ECTS
Total workload	75	3,00
Classes requiring direct contact with the teacher	45	2,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	30	1,00