



COURSE DESCRIPTION CARD - SYLLABUS

Course name

EXPERIMENTAL RESEARCH IN TRANSPORT

Course

Field of study

Year/Semester

Transport

1/1

Area of study (specialization)

Profile of study

Rail transport

general academic

Level of study

Course offered in

Second-cycle studies

Polish

Form of study

Requirements

full-time

elective

Number of hours

Lecture

Laboratory classes

Other (e.g. online)

30

15

Tutorials

Projects/seminars

Number of credit points

3

Lecturers

Responsible for the course/lecturer:

Responsible for the course/lecturer:

dr hab inż. Grzegorz Szymański prof. PP

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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:

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. 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	3,0
Classes requiring direct contact with the teacher	45	2,0
Student's own work (literature studies, preparation for laboratory classes/tutorials, preparation for tests/exam, project preparation) ¹	30	1,0

¹ delete or add other activities as appropriate