# POZNAN UNIVERSITY OF TECHNOLOGY



EUROPEAN CREDIT TRANSFER AND ACCUMULATION SYSTEM (ECTS)

# **COURSE DESCRIPTION CARD - SYLLABUS**

Course name

Preparation for carrying out scientific research [S1Trans1>PdPBN]

Course			
Field of study Transport		Year/Semester 3/5	
Area of study (specialization)		Profile of study general academi	с
Level of study first-cycle		Course offered ir Polish	1
Form of study full-time		Requirements compulsory	
Number of hours			
Lecture 15	Laboratory class 0	es	Other 0
Tutorials 0	Projects/seminar 0	S	
Number of credit points 1,00			
Coordinators dr hab. inż. Michał Libera		Lecturers	
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# **Prerequisites**

KNOWLEDGE: The student knows the basics of mathematics and statistics. SKILLS: The student knows how to use basic computer techniques. SOCIAL COMPETENCES: The student distinguishes between scientific and colloquial language.

# **Course objective**

The aim of teaching the subject is to familiarize students with the basic concepts and assumptions of scientific research and to provide knowledge enabling participation in the planning and implementation of scientific research projects.

# Course-related learning outcomes

#### Knowledge:

The student knows the basic techniques, methods and tools used in the process of solving tasks in the field of transport, mainly of an engineering nature engineering

#### Skills:

The student is able to properly plan and conduct perform experiments, including measurements and

computer simulations, interpret the obtained results, and correctly draw conclusions The student has the ability to formulate tasks in the field of transport engineering and their implementation using at least one of the popular tools

Social competences:

The student is aware of the social role of a technical university graduate, in particular, he/she understands the need to formulate and transfer to the society, in an appropriate style, information and opinions on engineering activities, technological achievements, as well as the achievements and traditions of the transport engineer profession

The student correctly identifies and solves dilemmas related to the profession of a transport engineer

# Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Learning outcomes presented above are verified as follows: Assessment of activity in the classroom and a test.

# Programme content

Classes include an overview of basic research methods and tools. During the course, the student becomes familiar with the research process, starting from the correct formulation of the research problem and hypotheses, through the creation of a research plan, appropriate sample selection, data collection, ending with data analysis, correct inference and compliance with copyright. The main thematic blocks are:

1. Methodology of scientific work. Basic definitions. Stages of scientific work. Scientific problem.

Formulating and verifying scientific hypotheses.

2. Methods and techniques of scientific research.

3. Planning the experiment. Population and statistical sample.

4. Descriptive statistics. Location measures. Measures of volatility. Measures of asymmetry. Measures of interdependence. Point and interval estimation.

5. Data mining methods in technical sciences. Creating models based on research results. Cross-Industry Standard Process for Data Mining.

# **Course topics**

Topics include issues in the field of transport in its broadest sense, in accordance with the thesis topic agreed with the supervisor.

# **Teaching methods**

Wykład informacyjny i problemowy z prezentacją multimedialną oraz dyskusja dydaktyczna.

# **Bibliography**

Basic

Kłos Z., Małdziński L., Wisłocki K.: Rozprawy naukowe. WPP, Poznań 2011 Leszek W., Wojciechowicz B.: Teorie, prawa i prawidłowości w nauce o eksploatacji obiektów technicznych. Wydawnictwo Instytutu Technologii Eksploatacji, Poznań-Radom 2006 Additional Hajduk Z.: Ogólna metodologia nauk, Redakcja Wyd.KUL, Lublin 2005 Pabis S.: Metodologia i metody empirycznych. PWN, Warszawa 1985 Szymanek K.: Sztuka argumentacji. Słownik terminologiczny. Wydawnictwo Naukowe PWN, Warszawa 2001.

Breakdown of average student's workload

	Hours	ECTS
Total workload	25	1,00
Classes requiring direct contact with the teacher	15	0,50
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	10	0,50