COURSE DESCRIPTION CARD - SYLLABUS

Course name

Preparation for carrying out scientific research

Course

Field of study

Transport

Year/Semester

3/5

Area of study (specialization)

-

Profile of study

general academic

Level of study

First-cycle studies

Course offered in

polski

Form of study

full-time

Requirements

compulsory

Number of hours

Lecture

15

Laboratory classes

Other (e.g. online)

Tutorials

Projects/seminars

Number of credit points

1

Lecturers

Responsible for the course/lecturer:

dr hab. inż. Michał Libera

e-mail: michal.libera@put.poznan.pl

tel. +4861 665-2223

Wydział Inżynierii Lądowej i Transportu

ul. Piotrowo 3, 60-965 Poznań

Responsible for the course/lecturer:

prof. dr hab. inż. Wiesław Zwierzycki

e-mail: wieslaw.zwierzycki@put.poznan.pl

tel. +4861 665-2236

Wydział Inżynierii Lądowej i Transportu

ul. Piotrowo 3, 60-965 Poznań

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:

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.

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	1,0
Classes requiring direct contact with the teacher	15	0,5
Student's own work (literature studies, preparation for laboratory classes/tutorials, preparation for tests/exam, project preparation) [1]	10	0,5

[1] delete or add other activities as appropriate