



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

Basis of electrical engineering

### Course

Field of study

Year/Semester

Transport

2/4

Area of study (specialization)

Profile of study

-

general academic

Level of study

Course offered in

First-cycle studies

Polish

Form of study

Requirements

full-time

elective

### Number of hours

Lecture

Laboratory classes

Other (e.g. online)

15

30

0

Tutorials

Projects/seminars

0

0

**Number of credit points**

4

### Lecturers

Responsible for the course/lecturer:

dr inż. Ryszard Mańczak

Responsible for the course/lecturer:

dr inż. Jakub Kowalczyk

### Prerequisites

The student has basic knowledge of physics in the field of electricity.

### Course objective

Learning about the basics of electrical engineering in general and their detailed application in vehicles.

### Course-related learning outcomes

Knowledge

The student has an ordered, theoretically founded general knowledge of technology, transport systems and various means of transport.

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

Student is able to make a critical analysis of the functioning of transport systems and other technical solutions and to evaluate these solutions, including: is able to effectively participate in the technical



inspection and assess the transport task from the point of view of non-functional requirements, has the ability to systematically conduct functional tests.

#### Social competences

The student understands that in technology, knowledge and skills very quickly become obsolete.

The student is aware of the importance of knowledge in solving engineering problems, knows examples and understands the causes of malfunctioning transport systems that have led to serious financial and social losses or to serious loss of health and even life.

#### Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Test on end of semester and evaluation of reports.

#### Programme content

Functional properties, parameters, technical solutions, methods of diagnosis and typical faults of circuit elements: power supply and start-up, classic and electronic ignition systems, electronic petrol injection systems as well as lighting and signaling systems.

Converters of non-electrical quantities into electrical quantities used in automotive systems: structure, principle of operation, parameters and methods of diagnosis.

#### Teaching methods

Auditorium lecture, laboratory classes.

#### Bibliography

##### Basic

1. Herner A., Riehl H.J., Elektrik, elektronik, Vogel Verlag, Würzburg (Deutschland), 2001 (tłum. pol. Elektrotechnika i elektronika w pojazdach samochodowych, WKiŁ, W-wa 2003).
2. Kasedorf J., Benzineinspritzung und Katalysatortechnik, Vogel Verlag, Würzburg (Deutschland), 1995 (tłum. pol. Układy wtryskowe i katalizatory, WKiŁ, Warszawa 1998).
3. Konopiński M., Elektronika w technice motoryzacyjnej, WKiŁ, Warszawa, 1987.

##### Additional

1. Denton T., Automobile electrical and electronic systems, Arnold, London 1995, 2000.



### Breakdown of average student's workload

	Hours	ECTS
Total workload	90	4,0
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) <sup>1</sup>	45	2,0

<sup>1</sup> delete or add other activities as appropriate