



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

Basic of electric systems in means of transport

### Course

Field of study

Year/Semester

Transport

2/3

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

compulsory

### Number of hours

Lecture

Laboratory classes

Other (e.g. online)

15

0

0

Tutorials

Projects/seminars

0

0

### Number of credit points

2

### Lecturers

Responsible for the course/lecturer:

dr inż. Ryszard Mańczak

Responsible for the course/lecturer:

dr inż. Jakub Kowalczyk

### Prerequisites

Student has basic knowledge of mathematics and physics

### Course objective

Getting to know the basic of theoretical and practical of the operation of DC and AC circuits as well as the construction and operation of selected electrical machines.

### Course-related learning outcomes

Knowledge

The student has extended and in-depth knowledge of physics useful for formulating and solving selected technical tasks, in particular for correct modeling of real problems.

The student has ordered and theoretically founded general knowledge in the field of key issues of technology and detailed knowledge in the field of selected issues in this discipline of transport 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.

The student is able to design elements in the field of transport engineering and construct simple machines.

#### Social competences

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:

Exam at the end of the semester.

#### Programme content

Basic of DC electric circuits (basic concepts, linear and nonlinear elements, Ohm's law, Kirchhoff's laws, methods of circuit solving, work, power, energy).

Basic of electric circuits of alternating current (basic concepts, generating alternating current, Ohm's law and Kirchhoff's laws, vector and time graphs, work, power, energy).

Transformers - structure and operation.

Electric motors - structure and operation.

Measuring instruments and electrical measurements.

#### Teaching methods

Auditorium lecture

#### Bibliography

Basic

1. Opydo W.: Elektrotechnika i elektronika dla studentów wydziałów nielektrycznych, Wydawnictwo Politechniki Poznańskiej, Poznań, 2012.
2. Opydo W., Kulesza K., Twardosz G.: Urządzenia elektryczne i elektroniczne. Przewodnik do ćwiczeń laboratoryjnych, Opydo W., Kulesza K., Twardosz G, Wydawnictwo Politechniki Poznańskiej, Poznań, 2004.

Additional

1. Bogdan Miedziński: Elektrotechnika. Podstawy i instalacje elektryczne, Wydawnictwo Naukowe PWN, Warszawa 1997.



2. Praca zbiorowa: Vademecum elektryka. COSiW.SEP.Warszawa.2005

### Breakdown of average student's workload

	Hours	ECTS
Total workload	50	2,0
Classes requiring direct contact with the teacher	15	1,0
Student's own work (literature studies, preparation for laboratory classes/tutorials, preparation for tests/exam, project preparation) <sup>1</sup>	35	1,0

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