



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

Introduction to electromobility [S1Elmob1>WdE]

### Course

Field of study

Electromobility

Year/Semester

1/1

Area of study (specialization)

–

Profile of study

general academic

Level of study

first-cycle

Course offered in

Polish

Form of study

full-time

Requirements

compulsory

### Number of hours

Lecture

30

Laboratory classes

0

Other

0

Tutorials

0

Projects/seminars

0

### Number of credit points

2,00

### Coordinators

dr inż. Justyna Michalak

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### Lecturers

### Prerequisites

The student starting this course should have basic knowledge of mathematics and physics.

### Course objective

Providing basic knowledge about electromobility. Infrastructure of electromobility. Types of electric vehicles. Ways of charging electric vehicles.

### Course-related learning outcomes

Knowledge:

1. The student has knowledge of electric vehicles.
2. The student has knowledge of the electromobility infrastructure and methods of charging electric vehicles.
3. The student has the knowledge necessary to understand the ecological aspects related to the development of electromobility.

Skills:

1. The student is able to see the economic, ecological and legal aspects of electromobility.

2. The student can conduct a discussion polarizing the subject of electromobility and is able to point out the advantages and disadvantages of the development of electromobility.

Social competences:

1. The student understands the need for continuous education in the field of electromobility due to the continuous progress in this field.
2. The student understands the need to inform the public about the advantages and disadvantages of electromobility.

### Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

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Lecture: knowledge acquired during the lecture is verified during a written test. The test consists of open-ended questions, scored depending on the difficulty level. Passing threshold: 50% of the total number of points. The test issues are sent to the chairman of the year by e-mail using the university's e-mail system 2-3 weeks before the final test date and are discussed during the lecture preceding the test lecture.

### Programme content

Types of electric vehicles. Hybrid vehicles. Hydrogen powered vehicles. Infrastructure of electromobility. Ways of charging electric vehicles.

### Course topics

Lecture: strategies for the development of electromobility in the world, Europe and Poland. Legal conditions - Act on electromobility. European and Polish legislation supporting the development of electromobility. Energy sources. The electromobility ecosystem.

Stabilization of the power grid by integrating electric vehicles with the grid. Energy storage.

Environmental and ecological aspects of electromobility. Emissivity of electric, hybrid and conventional vehicles. Methods of stimulating of the electric vehicles demand used in the world and in Poland.

Perspectives and dynamics of electromobility development. TCO (total cost of ownership) for different types of buses.

### Teaching methods

Lecture: multimedia presentation (including: drawings, pictures, animations, movies). Taking into account various aspects of the issues presented, including: economic, ecological, legal and social.

### Bibliography

Basic

1. Contestabile M., Tal G., Turrentine T.: Who's driving Electric Cars, 2020

2. Ehsani M., Gao Y., Longo S., Ebrahimi K.: Modern Electric, Hybrid Electric and Fuel Cell Vehicles, Taylor & Francis Group 2018

Additional

1. Filho W. L., Rath K., Mannka F.: E - Mobility in Europe, Trends and good Practice 2015

### Breakdown of average student's workload

	Hours	ECTS
Total workload	55	2,00
Classes requiring direct contact with the teacher	30	1,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	25	1,00