



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

Lighting engineering in electromobility [S1Elmob1>TŚwE2]

### Course

Field of study  
Electromobility

Year/Semester  
2/4

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  
0

Laboratory classes  
30

Other (e.g. online)  
0

Tutorials  
0

Projects/seminars  
0

### Number of credit points

2,00

### Coordinators

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### Lecturers

### Prerequisites

A student starting this course should have basic knowledge of lighting technology, electrical engineering and metrology. The ability to effectively self-educate in a field related to the chosen field of study.

### Course objective

Provide students with basic information on lighting technology, with particular emphasis on issues related to transport and vehicles.

### Course-related learning outcomes

Knowledge:

1. Has an organized knowledge of the impact of lighting on road safety.
2. Knows and understands the processes taking place in the life cycle of lamp systems and lighting fittings in electromobility systems.

#### Skills:

1. Can plan and carry out experiments, including measurements of basic photometric quantities; is able to present the obtained results in numerical and graphic form, interpret them and draw appropriate conclusions.
2. Can compare various lighting solutions, evaluate them in terms of selected physiological, economic and ecological criteria.
3. On the basis of technical documentation, with the use of appropriate methods, tools and materials, is able to perform measurements and assess compliance with the approval requirements for lighting devices used in vehicles.

#### Social competences:

1. Understands the importance of knowledge in solving technical problems. Is aware of the intense technological progress in lighting technology and the related need to use the knowledge of experts when solving engineering tasks beyond their own competences.

### Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

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The skills acquired during the laboratory classes are verified on the basis of the test report containing the analysis of the obtained results, conclusions from the measurements and a discussion of the obtained results. Passing threshold: positive assessment of the report.

### Programme content

Photometric, spectrophotometric and colorimetric measurements, road lighting, lighting in automotive technology, road lighting, visual performance of drivers. Road lighting design.

### Course topics

Measurement of the quality of road lighting, measurement of the quality of lighting of pedestrian crossings, testing of the visual capacity of drivers using a car driving simulator, testing of automotive passing lights and daytime running lights. Photometric and colorimetric measurements of light sources used in automotive. Road lighting design.

### Teaching methods

Practical exercises in the field of testing lighting devices and systems. Discussion, analysis of the obtained results.

### Bibliography

#### Basic

1. Żagan W. Podstawy techniki świetlnej. Warszawa, Oficyna Wydawnicza Politechniki Warszawskiej, 2014.
2. Trzeciak K. Diagnostyka samochodów osobowych rozdz. 8. Warszawa, WKŁ, 2008.
3. Żagan W. Oprawy oświetleniowe Kształtowanie rozsyłu strumienia świetlnego i rozkładu luminancji. Warszawa, Oficyna Wydawnicza Politechniki Warszawskiej, 2012.
4. Demidowicz R.: Oświetlenie (z cyklu: W moim samochodzie). Warszawa, WKŁ 2000.
5. Regulations relating to the approval of lighting devices for use in vehicles.
6. Catalog cards and subject standards.

#### Additional

1. Kaźmierczak P., Wpływ regeneracji klosza i odbłyśnika reflektora na właściwości fotometryczne świateł mijania, Przegląd elektrotechniczny, wrzesień 2016, nr 9, str. 61-64.
2. Kaźmierczak P., Badania fotometryczne reflektorów samochodowych po 10 latach eksploatacji, Przegląd elektrotechniczny, sierpień 2014, nr 8, str. 61-64.

### 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