



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

Lighting engineering

### Course

Field of study

Electrical Engineering

Area of study (specialization)

Lighting engineering

Level of study

Second-cycle studies

Form of study

part-time

Year/Semester

2/4

Profile of study

general academic

Course offered in

polish

Requirements

compulsory

### Number of hours

Lecture

10

Tutorials

Laboratory classes

10

Projects/seminars

10

Other (e.g. online)

### Number of credit points

3

### Lecturers

Responsible for the course/lecturer:

Krzysztof Wandachowicz, Ph.D, D. Sc., Eng.

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Engineering

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Responsible for the course/lecturer:

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### Prerequisites



A student starting this course should have a basic knowledge of lighting engineering. Basic skills in measuring electrical and photometric quantities also in lighting design. The ability to effectively self-study in a field related to the chosen field of study.

### Course objective

Providing students with detailed information on how to illuminate various rooms and facilities.

### Course-related learning outcomes

#### Knowledge

1. Has ordered and theoretically founded knowledge in the field of lighting design.
2. Has in-depth knowledge of lighting technology in the field of lighting various objects; knows the processes taking place during the operation of lighting devices.
3. Has extended knowledge of computer-aided design in lighting technology.

#### Skills

1. Can perform lighting design project and analyze the obtained effects according to physiological, economic and aesthetic criteria.
2. Can design lighting for various objects.

#### Social competences

1. Recognizes the importance of knowledge in solving cognitive and practical problems, and understands that knowledge and skills quickly become obsolete in lighting engineering and therefore require constant replenishment.

### Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

The knowledge acquired during the lecture will be verified by the final test carried out in the 7th lecture. The test consists of 15-25 questions (test and open-ended), with different scores. Passing threshold: 51% of points. Assessment issues on the basis of which the questions are developed are available on the Department's website and on the eKursy platform.

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 and/or presentation.

The skills acquired during the design exercises are verified on the basis of the lighting design of the facility indicated by the teacher and the discussion of the results obtained. Passing threshold: positive evaluation of the completed project.

### Programme content

Lecture: Road lighting and the level of visibility, lighting of pedestrian crossings, lighting of tunnels. Outdoor lighting and greenery lighting. Lighting for museum facilities. Stage lighting. Interior lighting with daylight. Illumination of objects.



Project: Analysis of technical, economic and psychophysiological conditions determining the choice of lighting systems. Assessment of changes in lighting parameters over time and development of operating and maintenance procedures for lighting devices. Economic and energy efficiency of lighting systems. Assessment of illumination of selected architectural objects. Creating the illumination concept for an architectural object.

Laboratory: Practical exercises in the field of lighting various objects. Discussion and analysis of the obtained results.

### Teaching methods

Lecture: multimedia presentation (drawings, photos, charts) supplemented with examples given on the board.

Laboratory and project: Performing practical tasks under the supervision of the lecturer.

### Bibliography

#### Basic

1. Żagan W.: Podstawy technik świetlnej. Oficyna Wydawnicza Politechniki Warszawskiej, Warszawa 2005.
2. Pracki P.: Projektowanie oświetlenia wnętrz, Oficyna Wydawnicza Politechniki Warszawskiej, Warszawa 2011.
3. Bąk J.: Technika oświetlania : wybrane zagadnienia oświetlania wnętrz Stowarzyszenie Elektryków Polskich. Centralny Ośrodek Szkolenia i Wydawnictw, Wraszawa 2014.
4. Żagan W. Iluminacja obiektów. Oficyna Wydawnicza Politechniki Warszawskiej (2003).
5. Żagan W., Krupiński R.: Teoria i praktyka iluminacji obiektów. Oficyna Wydawnicza Politechniki Warszawskiej (2016).
6. Catalog cards and subject standards.

#### Additional

1. Literature available on the website: [www.licht.de](http://www.licht.de)
2. Teaching materials available on the website: <http://lumen.iee.put.poznan.pl>.
3. Lighting Handbook, Reference & Application. IES of North America, New York 2010.



### Breakdown of average student's workload

	Hours	ECTS
Total workload	90	3,0
Classes requiring direct contact with the teacher	30	1,0
Student's own work (literature studies, preparation for laboratory and design classes, preparation of measurement results, preparation for test, preparation of the project) <sup>1</sup>	60	2,0

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