



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

Lighting equipment and control systems [S2Eltech2-TŚ>UOISS]

### Course

Field of study	Year/Semester
Electrical Engineering	1/2
Area of study (specialization)	Profile of study
Lighting Engineering	general academic
Level of study	Course offered in
second-cycle	polish
Form of study	Requirements
full-time	compulsory

### Number of hours

Lecture	Laboratory classes	Other (e.g. online)
15	15	0
Tutorials	Projects/seminars	
0	0	

### Number of credit points

2,00

### Coordinators

dr hab. inż. Krzysztof Wandachowicz  
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### Lecturers

### Prerequisites

A student starting this course should have knowledge of lighting equipment and lighting engineering in the field of: calculating and measuring basic photometric quantities, lighting equipment, lighting equipment, lighting design requirements. The ability to effectively self-study in a field related to the chosen field of study.

### Course objective

The student should obtain advanced knowledge of construction and operation of electrical equipment: lamps and luminaires. Transfer of knowledge about the properties of lamps, luminaires and control systems.

### Course-related learning outcomes

Knowledge:

1. Has in-depth and expanded knowledge of physics, necessary to understand the physical phenomena affecting the properties of electric lamps and the operation of control systems.
2. Has extended knowledge of electrical and photometric measurements; has in-depth knowledge of developing the results of the experiment.
3. Has in-depth knowledge of lighting engineering in the field of the properties of lamps and luminaires,

electrical and photometric measurements; knows the processes taking place in the life cycle of electric lamps.

Skills:

1. Can obtain information from literature, databases and other sources, make their interpretation, evaluation, critical analysis and synthesis, as well as draw conclusions and formulate and exhaustively justify opinions on lighting equipment.
2. Can plan and carry out measurements of basic electrical and photometric quantities.

Social competences:

1. Understands the importance of knowledge in solving technical problems. Is aware of the intense technological progress in lighting engineering and the related need to systematically expand knowledge.

### 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 through a written exam. The exam consists of at least twenty test questions. Passing threshold: 51% of points. Assessment issues on the basis of which the questions are developed are available on the eKuryk 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.

### Programme content

Lecture: Methods of producing light: incandescence, luminescence. Detailed parameters and characteristics of electric lamps. Normative requirements for lamps and luminaires. Ecodesign (EU) requirements for lamps and luminaires. New regulations on lighting equipment. Control systems of luminaires.

Laboratory: Practical exercises in the field of testing lamps and luminaires. Discussion, analysis of the obtained results.

### Teaching methods

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

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

### Bibliography

Basic:

1. Żagan W.: Podstawy technik świetlnej. Oficyna Wydawnicza Politechniki Warszawskiej, Warszawa 2005.
2. Wiśniewki A.: Elektryczne źródła światła, Oficyna Wydawnicza Politechniki Warszawskiej, Warszawa 2010.
3. Bąk J., Pabiańczyk W.: Podstawy techniki świetlnej. Wyd. Pol. Łódzkiej, Łódź 1994
4. Catalog cards and subject standards.
5. COMMISSION DELEGATED REGULATIONS (EU) with regard to energy labelling of light sources and eco-design requirements for light sources and separate control gears (<https://eur-lex.europa.eu/>).

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
4. Wandachowicz K.: Charakterystyki techniczne diod świecących. VII Konferencja Naukowo-Techniczna z cyklu Energooszczędność w oświetleniu n.t. Technika Świetlna 2016, Poznań 10.05.2016, s. 27?32.
5. Wandachowicz K., Michałowska N., Taisner M.: Zalety stosowania diod świecących w lampach do użytku domowego oraz w oprawach oświetleniowych, Poznan University of Technology, Academic Journals, Electrical Engineering, 2015, Iss. 83, s. 203-211.

### Breakdown of average student's workload

	Hours	ECTS
Total workload	60	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)	30	1,00