



COURSE DESCRIPTION CARD - SYLLABUS

Course name

BUILDING PHYSICS - LIGHTING

Course

Field of study

ARCHITECTURE

Area of study (specialization)

Level of study

Second-cycle studies

Form of study

full-time

Year/Semester

I/1

Profile of study

general academic

Course offered in

english

Requirements

compulsory

Number of hours

Lecture

15

Laboratory classes

Tutorials

Projects/seminars

Other (e.g. online)

Number of credit points

1

Lecturers

Responsible for the course/lecturer:

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Wydział Architektury, J. Rychlewskiego 2 Street,

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Prerequisites

1 Knowledge:

- the student has an orderly, theoretically founded general knowledge covering key issues in the field of lighting technology;
- the student has a basic knowledge of the role and importance of artificial light in architectural and urban design;
- the student has basic knowledge necessary to understand the social, economic, legal and non-technical conditions of the implementation of artificial light systems in the zones of human life and functioning.



2 Skills:

- the student is able to obtain information from literature, databases and other, properly selected sources in English, can integrate information, interpret it, as well as draw conclusions and formulate and justify opinions;
- the student is able to make a critical analysis of the way of functioning and evaluate the existing solutions, systems and processes;
- is able to communicate using various techniques in the professional environment and in other environments.

3 Social competences:

- the student understands the need for lifelong learning, is able to inspire and organize the learning process of other people;
- understanding the need to expand their competences, readiness to cooperate within the team.

Course objective

The aim of the course is to provide knowledge in the field of:

- standardization of architectural interiors with electric (artificial) light,
- issues of measurement and standardization as well as road lighting calculations,
- modern lighting systems and their control systems,
- the basis of renewable energy as applied to the energy needed for artificial lighting,
- economics, ergonomics and ecology of lighting systems in relation to architectural interiors,
- calculations, simulations and visualization of lighting for design purposes.

Course-related learning outcomes

Knowledge

B.W5. advanced issues of construction, construction technologies and installations, construction and building physics, covering key, complex issues in architectural, urban and planning design;

B.W6. technical and construction regulations.

Skills

-

Social competences

-



Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Passing conditions and lecture evaluation method.

The criterion for evaluating the subject will be knowledge of the presented aim of the subject.

Summative assessment:

Written test after the lectures - in the form of a multiple-choice test or essay questions. Completing an item for 50% points + 1.

Assessment scale: 2.0,3,0; 3.5; 4.0; 4.5; 5.0

Obtaining a positive grade from the module depends on the student achieving all the learning outcomes listed in the syllabus at the level of 50% + 1 points

Programme content

1. basic photometric values as a tool for formulating lighting guidelines and recommendations and for controlling light parameters in lighting architectural interiors,
2. standardization of architectural interiors with electric (artificial) light,
3. issues of measurement and standardization as well as road lighting calculations,
4. energy efficiency and durability of lighting equipment - economy, ecology and environment,
5. elements of renewable energy in the lighting of architectural interiors,
6. calculation, simulation and visualization of lighting for design purposes,
7. basic tools of IT implementation of numerical and visualization lighting calculations.

Teaching methods

1. lecture;
2. lecture with multimedia presentation;
3. eLearning Moodle (a system supporting the teaching process and distance learning).

Bibliography

Basic

1. Bąk Jerzy, Pabjańczyk Wiesława, Podstawy techniki świetlnej, Nakład Politechniki Łódzkiej, Łódź 1994.
2. Hauser Jacek, Elektrotechnika. Podstawy elektrotermii i techniki świetlnej, Wydawnictwo Politechniki Poznańskiej 2006.
3. Mielicki Józef, Zarys wiadomości o barwie, Fundacja Rozwoju Polskiej Kolorystyki, Łódź 1997.



4. Technika Świetlna '96 Poradnik-Informator, Praca zbiorowa członków Polskiego Komitetu Oświetleniowego Stowarzyszenia Elektryków Polskich, Warszawa 1996.
5. Żagan Wojciech, Podstawy techniki świetlnej, Oficyna Wydawnicza Politechniki Warszawskiej, Warszawa 2005.
6. Żagan Wojciech, Iluminacja obiektów, Oficyna Wydawnicza Politechniki Warszawskiej, Warszawa 2003.
7. PN-EN 12193:2002 (U) Oświetlenie stosowane w obiektach sportowych.
8. PN-EN 1838:2005 Zastosowanie oświetlenia. Oświetlenie awaryjne.
9. PN-EN 12665:2003 (U) Światło i oświetlenie. Podstawowe terminy oraz kryteria określania wymagań dotyczących oświetlenia.
10. PN-EN 13032-1:2005 (U) Światło i oświetlenie. Pomiar i prezentacja danych fotometrycznych lamp i opraw oświetleniowych. Część 1: Pomiar i format pliku.
11. PN-EN 13032-2:2005 (U) Światło i oświetlenie. Pomiar i prezentacja danych fotometrycznych lamp i opraw oświetleniowych. Część 2: Prezentacja danych dla miejsc pracy wewnątrz i na zewnątrz budynków.
12. PN-CEN/TR 13201-1:2005 (U) Oświetlenie dróg. Część 1: Wybór klas oświetlenia.
13. PN-EN 13201-2:2005 (U) Oświetlenie dróg. Część 2: Wymagania oświetleniowe.
14. PN-EN 13201-3:2005 (U) Oświetlenie dróg. Część 3: Obliczenia oświetleniowe.
15. PN-EN 13201-4:2005 (U) Oświetlenie dróg. Część 4: Metody pomiarów parametrów oświetlenia.
16. PN-EN 12464-1:2012 „Light and lighting - Lighting of work places - Part 1: Indoor work places”.
17. PN-EN 12464-2:2014 „Light and lighting -- Lighting of work places -- Part 2: Outdoor work places”.
18. PN-IEC 60364 Instalacje elektryczne w obiektach budowlanych (norma wieloarkuszowa).
19. Ustawa Prawo Energetyczne z dnia 10 kwietnia 1997 r. (Dz. U. z 1997 r. Nr 54, poz. 348 z późniejszymi zmianami).
20. Zalecenia i wytyczne projektowe w zakresie luminancji i barwy w iluminacji (Design recommendations and guidelines for luminance and color in illumination).

Additional

1. Majkowski Konstanty, Podstawy teoretycznej techniki oświetleniowej, Państwowe Wydawnictwo Naukowe, Warszawa 1953.
2. Nawrowski A., Dominanty świetlne w iluminacji wybranych obiektów architektonicznych, Rozprawa Doktorska, Poznań: Politechnika Poznańska, 2010.



3. Oleszyński T., Miernictwo techniki świetlnej, PWN, Warszawa 1957.

4. Tomczewski Andrzej, Rozprawa doktorska „Analiza rozkładu strumienia świetlnego we wnętrzach z uwzględnieniem wielokrotnych odbić”, Poznań, grudzień 1998.

Breakdown of average student's workload

	Hours	ECTS
Total workload	31	1,0
Classes requiring direct contact with the teacher	16	1,0
Student's own work (literature studies, preparation for laboratory classes/tutorials, preparation for tests/exam, project preparation) ¹		

¹ delete or add other activities as appropriate