



COURSE DESCRIPTION CARD - SYLLABUS

Course name

Lighting design in CAD systems [N1Eltech1>F-POwCAD]

Course

Field of study

Electrical Engineering

Year/Semester

5/9

Area of study (specialization)

–

Profile of study

general academic

Level of study

first-cycle

Course offered in

Polish

Form of study

part-time

Requirements

elective

Number of hours

Lecture

10

Laboratory classes

0

Other

0

Tutorials

0

Projects/seminars

20

Number of credit points

3,00

Coordinators

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Lecturers

Prerequisites

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

Course objective

Providing students with extended information on the normative requirements in the field of interior lighting design, outdoor lighting and road lighting. Introduction to designing illumination of buildings and creating visualization projects of luminance distributions in a 3D structure. To acquaint students with the practical aspects of interior lighting design, road lighting, lighting in sports and lighting of buildings. Developing the ability to create multi-criteria lighting concepts and choose the most optimal one in terms of the adopted criterion. Using CAD programs to support the work of a lighting designer.

Course-related learning outcomes

Knowledge:

1. Has an ordered and theoretically founded knowledge of key issues concerning the use of lighting design support applications.
2. Knows and understands the principles of lighting design, is aware of the latest development trends.

Skills:

1. Can use properly selected IT tools in order to implement a lighting design and simulation that allows to visualize the luminance distribution on the building facade surface.
2. Can use the catalogs of lighting equipment available in printed and electronic versions, compare and evaluate the technical parameters of lamps and lighting fittings in order to apply them to the lighting design.

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 systematically expand knowledge and use modern lighting solutions in the design.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

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The knowledge acquired during the lecture will be verified by the final test carried out in the 7th lecture.

The test consists of 15-20 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 eLearning Moodle platform.

The skills acquired during the project classes are verified on the basis of the lighting design made and the discussion on the results obtained. Passing threshold: positive evaluation of the completed project.

Programme content

Deepening knowledge in the field of lighting design and discussing normative requirements.

Interior lighting, outdoor lighting, road lighting. Illumination of objects.

Pedestrian crossing lighting. Lighting in sports.

Course topics

Lecture: In-depth knowledge of lighting design. Normative requirements in interior lighting, road lighting and sports lighting. Introduction to object illumination.

Pedestrian crossing lighting. Viewing conditions for pedestrians at a pedestrian crossing. The importance of contrast in the lighting of pedestrian crossings. Lighting requirements and recommendations. Practical implementation of pedestrian crossing lighting. Lighting classes for sports facilities. Lighting requirements. Lighting of sports facilities for television broadcasts.

Project: Creating multi-criteria lighting designs (Relux, Dialux). Using CAD programs to design lighting and create design documentation. Creating a lighting design in a 3D structure using, among others, 3ds MAX application. Discussion and analysis of the obtained results.

Teaching methods

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

Project: Working with lighting design programs. Using CAD programs and designing in a 3D structure.

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 Wydawnictwo, Warszawa 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. User manuals of Relux, Dialux, Auto CAD, 3ds MAX.

Additional

1. Literature available on the website: 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. Catalog cards and subject standards.

Breakdown of average student's workload

	Hours	ECTS
Total workload	75	3,00
Classes requiring direct contact with the teacher	45	2,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	30	1,00