



COURSE DESCRIPTION CARD - SYLLABUS

Course name

Elective course A: Basic of Lighting Design

Course

Field of study

Electrical Engineering

Area of study (specialization)

Electronics, measurements and lighting technology

Level of study

First-cycle studies

Form of study

full-time

Year/Semester

3/6

Profile of study

general academic

Course offered in

Polish

Requirements

elective

Number of hours

Lecture

15

Tutorials

Laboratory classes

30

Projects/seminars

15

Other (e.g. online)

Number of credit points

4

Lecturers

Responsible for the course/lecturer:

Małgorzata Zalesińska, D. Sc., Eng.

email: Malgorzata.Zalesinska@put.poznan.pl

tel. 616652398

Faculty of Control, Robotics and Electrical
Engineering

Piotrowo 3A Street, 60-965 Poznań

Responsible for the course/lecturer:

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

email: Krzysztof.Wandachowicz@put.poznan.pl

tel. 616652397

Faculty of Control, Robotics and Electrical
Engineering

Piotrowo 3A Street, 60-965 Poznań

Prerequisites



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

Course objective

Providing students with basic information on normative requirements in the field of lighting and lighting design principles. To acquaint students with practical aspects of interior lighting, road lighting and lighting in sport. The rules for the selection of lighting equipment. Developing skills in creating multi-criteria lighting concepts and choosing the most optimal one based on the adopted criterion.

Course-related learning outcomes

Knowledge

1. Has basic knowledge about the principles of interior lighting design. Knows normative requirements for indoor and outdoor lighting.
2. Has extended and in-depth knowledge of physics in the field of electric power and optics, necessary to understand the basic physical phenomena occurring in lighting engineering.
3. Has structured knowledge in the field of measuring basic lighting parameters.

Skills

1. Is able to plan and carry out simulation of indoor lighting of illuminance distributions. Can present the results obtained in numerical and graphic form, interpret them and draw the right conclusions.
2. Is able to use the catalogs of lighting equipment available in printed and on-line versions, compare and evaluate the technical parameters of lamps and luminous, as well as formulate and justify opinions, discuss about them.
3. Is able to use his knowledge in the selection of measuring equipment in order to assess the quality of indoor and outdoor lighting. Is able to interpret measurement results and assess them with normative requirements.

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 necessity of systematically expanding knowledge and using modern lighting solutions in designing.
2. Is aware of the contribution of own work for the good of the team and the work establishment. Is able to cooperate in a team and take over various functions during the implementation of a given task.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

The knowledge obtained in the lecture will be verified by a colloquium passed in the 7th lecture. The exam consists of 15-25 questions (test and open), variously scored. Pass threshold: 51% of the points. The final topics on which the questions are based will be placed on the eKursy platform.



Skills acquired as part of the laboratory are verified on the basis of one test report and one presentation containing the analysis of the results obtained, the conclusions of the measurements and a discussion regarding the results obtained. Assessment threshold: positive assessment of report and presentation.

Skills acquired as part of the project exercises are verified on the basis of the lighting design of the object indicated by the teacher and discussion of the results obtained. Assessment threshold: positive assessment of the completed project.

Programme content

Lecture: In-depth knowledge of luminous quantities, laws of light technology and psychophysiology of vision. The glare and its effect on vision. Quantitative and qualitative parameters of lighting. General and specific principles of lighting design. Normative requirements for interior lighting, road lighting and lighting in sports. Operational changes in lighting parameters.

Laboratory: Practical exercises in the field of testing the psychophysiology of vision, assessing the quality of indoor and outdoor lighting. Discussion, analysis of obtained results.

Project: Creating a multi-criteria concept for lighting office spaces with monitors, performing lighting calculations. Discussion, analysis of the results obtained.

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.

Project: Work with the program designed for lighting design. Work with catalogues of light sources and luminous.

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. Wiśniewki A.: Elektryczne źródła światła, Oficyna Wydawnicza Politechniki Warszawskiej, Warszawa 2010.
4. Bąk J.: Technika oświetlania : wybrane zagadnienia oświetlania wnętrz Stowarzyszenie Elektryków Polskich. Centralny Ośrodek Szkolenia i Wydawnictw, Warszawa 2014.

Additional

1. Materiały dostępne na stronie internetowej :www.licht.de



2. Filipek M., Cyrynger J.: Badanie oświetlenia, DASL Systems, Kraków 2017
3. Materiały dydaktyczne dostępne na stronie: <http://lumen.iee.put.poznan.pl>.
4. Normy przedmiotowe.

Breakdown of average student's workload

	Hours	ECTS
Total workload	108	4,0
Classes requiring direct contact with the teacher	70	3,0
Student's own work (literature studies, preparation for laboratory and design classes, preparation of measurement results, preparation for the final test , preparation of the project, preparation for test) ¹	38	1,0

¹ delete or add other activities as appropriate