STUDY MODULE DESCRIPTION FORM

Name of the module/subject		Code
Lighting engineering		**1010325341010321119**

Field of study	Profile of study (general academic, practical)	Year /Semester
Electrical Engineering	**(brak)**	**2 / 4**
Elective path/specialty	Subject offered in:	Course (compulsory, elective)
Lighting Engineering	**Polish**	**obligatory**

Cycle of study:	Form of study (full-time,part-time)
Second-cycle studies	**part-time**

No. of hours					No. of credits
Lecture: **9**	Classes: **-**	Laboratory: **9**	Project/seminars: **9**		**3**

Status of the course in the study program (Basic, major, other)	(university-wide, from another field)
(brak)	**(brak)**

Education areas and fields of science and art	ECTS distribution (number and %)
technical sciences	**3 100%**
Technical sciences	**3 100%**

Responsible for subject / lecturer:

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Prerequisites in terms of knowledge, skills and social competencies:

1	**Knowledge**	Established knowledge base in the field of lighting technology: the calculation and measurement of basic lighting, lighting, lighting design requirements.
2	**Skills**	and evaluation of lighting parameters. Ability to effectively self-education in a field related to the chosen field of study.
3	**Social competencies**	Awareness of the need to broaden their competence, willingness to work together as a team.

Assumptions and objectives of the course:

-Knowing the specific lighting requirements, theoretical and practical methods of lighting design. Mastering the skills of project implementation and evaluation of lighting systems for indoor and outdoor use.

Study outcomes and reference to the educational results for a field of study

Knowledge:

1. Can introduce the principle of lighting technology for the rational selection and multi-criteria analysis and evaluation of lighting systems technical feasibility and operation - [K_W05++ K_W13+++, K_W18++]

Skills:

1. He can analyze the possibilities, limitations, and requirements for the selection and design of interior lighting and outdoor lighting - [K_U12+++]
2. Able to develop and introduce energy efficient lighting system with regard to these standards - [K_U13++]

Social competencies:

1. . Understands the need to know the capabilities and continuous training. Able to work in a creative way. Is aware of and understands the importance and impact of non-technical aspects of electrical engineer operations, including the impact of light and lighting on the environment - [K_K01 ++]

Assessment methods of study outcomes

Lecture:

-assessment of knowledge and skills listed on the written test,

Laboratory:

-assessment of knowledge and skills related to the implementation of the tasks your practice, the assessment report performed exercise.

The project:

- to evaluate the knowledge and skills associated with the implementation of the project.

Get extra points for the activity in the classroom, developed aesthetic diligence reports and tasks within their own learning.

Course description

-Quantitative and qualitative parameters of lighting.

-Psychophysiological rules, aesthetic and economical in the selection of lighting.

-Recommendations and regulatory requirements.

-The choice of lighting systems, the selection of sources and luminaires.

-Changes during the lighting parameters and operation of the lighting.

-Emergency lighting.

-Typical solutions in lighting design: for example, office, retail, industrial.

-Lighting of roads.

-Architectural lighting.

Update 2017:

Applied methods of education:

lectures - with multimedia presentations (drawings, photographs, animations) supplemented by examples, run in an interactive way, with questions to students or specific students, presenting a new topic preceded by a reminder of related content known to students from other subjects;

laboratories, projects - supplemented with multimedia presentations, use of tools to enable students to perform home-based tasks (open source software), demonstrations.

Basic bibliography:

1. Philips, Lighting Manual. Wyd.V 1993 r.

2. Technika Świetlna 09. Poradnik Informator. Wyd. PKOś, Warszawa 2009

3. Normy przedmiotowe PN-EN

4. Żagan W.: Iluminacja obiektów. Ofic. Wyd. Pol. Warszawskiej, Warszawa 2003

Additional bibliography:

1. Lighting Handbook, Reference &Application. IES of Nofth America, New York 2010

2. Górczewska M., Nowa norma dotycząca oświetlenia drogowego 13201:2016. SEP INPE, ISSN 1234-0081, Nr 205, październik 2016, s.37-43

3. Górczewska M.,Czyżewski D., Oświetlenie przejść dla pieszych. Wiadomości Elektrotechniczne, ISSN 0043-5112, Nr 10/2016, s.23-26,

4. Górczewska M.,Szydłowska K., Projektowanie oświetlenia w obiektach handlowych. Poznan University of Technology, Academic Journals, Electrical Engineering, Issue 88, Poznań 2016, s.337-344, ISSN 1897-0737

5. Górczewska M.,Mroczkowska S., Iluminacja kościoła p.w. Św. Józefa w Poznaniu. Poznan University of Technology, Academic Journals, Electrical Engineering, Issue 83, Poznań 2015, s.229-236, ISSN 1897-0737

Result of average student's workload

Activity	Time (working hours)
1. participation in lectures	9
2. participation in laboratories	9
3. participation in projects	9
4. participation in the consultation	10
5. preparation for and execution of laboratory reports	16
6. realization of the project	15
7. preparation to the exam	12
8. participation in the exam	6

Student’s workload

Source of workload	hours	ECTS
Total workload	86	3
Contact hours	43	2
Practical activities	50	2