

STUDY MODULE DESCRIPTION FORM		
Name of the module/subject Lighting design		Code 1010322331010326102
Field of study Electrical Engineering	Profile of study (general academic, practical) (brak)	Year /Semester 2 / 3
Elective path/specialty Lighting Engineering	Subject offered in: Polish	Course (compulsory, elective) obligatory
Cycle of study: Second-cycle studies	Form of study (full-time, part-time) full-time	
No. of hours Lecture: - Classes: - Laboratory: - Project/seminars: 15		No. of credits 1
Status of the course in the study program (Basic, major, other) (brak)		(university-wide, from another field) (brak)
Education areas and fields of science and art technical sciences Technical sciences		ECTS distribution (number and %) 1 100% 1 100%
Responsible for subject / lecturer: Małgorzata Zalesińska Ph.D. email: Malgorzata.Zalesinska@put.poznan.pl tel. 61 6652398 Faculty of Electrical Engineering ul. Piotrowo 3A 60-965 Poznań		
Prerequisites in terms of knowledge, skills and social competencies:		
1	Knowledge	Established knowledge base in the field of lighting engineering: the calculation and measurement of basic lighting parameters, lighting equipments, lighting design requirements.
2	Skills	The ability to use knowledge in lighting engineering to perform the calculation and evaluation of lighting parameters. Ability to effectively self-education in a field related to the chosen field of study.
3	Social competencies	Is aware of the need to broaden their competence, willingness to work together as a team
Assumptions and objectives of the course: Detailed learn the rules and methods of designing lighting systems.		
Study outcomes and reference to the educational results for a field of study		
Knowledge:		
1. Knowledge of lighting engineering used to design lighting systems. - [K_W13++]		
2. Characterize the factors influencing energy efficiency and economical lighting. - [K_W13+, K_W05+]		
3. Perform multi-criteria analysis of the selection of lighting equipment to work on the lighting system - [K_W14+, K_W05+]		
Skills:		
1. Apply the rules for physiological, aesthetic, economic lighting design. Analyze the energy efficiency of indoor and outdoor lighting. Assess the economic efficiency of the lighting system. - [K_U02+++ , K_U14+++]		
Social competencies:		
1. Able to work in a group. Able to share and coordinate the work between team members. - [K_K02 ++]		
Assessment methods of study outcomes		
Evaluate the knowledge and skills associated with the implementation of the project. Get extra points for the activity in the classroom, especially for the following: comments related to the improvement of teaching materials; diligence and accuracy in performing the tasks.		

Course description		
<p>Psychophysiological rules, aesthetic and economical in the selection of lighting. General rules of architectural illumination. Energy efficiency of lighting systems. Economic efficiency of lighting. The impact of the light on the matter, lively and inanimate objects.</p> <p>Update 2017: Light pollution, Light Trespass</p> <p>Applied methods of education: Project - analysis of various aspects of solving problems, including economic, energy, discussion on applied design solutions, ecological, detailed review of project materials by the project leader.</p>		
<p>Basic bibliography:</p> <ol style="list-style-type: none"> 1. Bąk J., Technika Oświetlania, PWN, Warszawa 1981. 2. Goc W, Kielboń M., Przygodzki A., Elementy audytu oświetlenia, Wydawnictwo Politechniki Śląskiej, Gliwice 2010 3. Lighting Handbook, Reference & Application. IES of Nofth America, New York 2010. 4. Technika Świetlna ?09, tom 2 i 3. Poradnik ? Informatore. Wyd. PKOś, Warszawa 2012 5. Normy przedmiotowe 6. 108. Zalesińska M, Górczewska M.: Comparative study of lighting quality and energy efficiency for various road lighting situations, VI. IEEE Lighting Conference of the Visegrad Countries LUMEN V4, Karpacz, Poland, September 13 - 16, 2016, LumenV4 Proceedings pp. 205-209. 7. Zalesinska M.: New technology and new hazards related to outdoor LED billboards. Bezpieczeństwo Pracy Środowisko i Zarządzanie pod red. Danuty Zwolińskiej . Wyższa Szkoła Ochrony Pracy w Katowicach. Katowice 2015. s. 273-285, ISBN:978-83-61378-50-1 8. Zalesińska M.: Atrakcyjność reklam LED, a ich zagrożenie dla bezpieczeństwa ruchu drogowego i uciążliwość dla mieszkańców. Miesięcznik INPE SEP. Informacje o normach i przepisach elektrycznych. Nr 191-192, sierpień ? wrzesień 2015 r. s. 17-25, ISSN 1234-0081. 		
<p>Additional bibliography:</p> <ol style="list-style-type: none"> 1. Bąk J., Pabiańczyk W.: Podstawy techniki świetlnej. Wyd. Pol. Łódzkiej, Łódź 1994. 2. Żagan W.: Podstawy techniki świetlnej. Ofic. Wyd. Pol. Warszawskiej, Warszawa 2005 3. Żagan W.: Iluminacja obiektów. Oficyna Wydawnicza PW, Warszawa 2003 4. Materiały na stronie: www.licht.de 		
Result of average student's workload		
Activity	Time (working hours)	
1. Participation in project activities	15	
2. Participation in consultation.	5	
3. Participation for colloquium	8	
4. Colloquium	2	
Student's workload		
Source of workload	hours	ECTS
Total workload	30	1
Contact hours	22	1
Practical activities	23	1