

### COURSE DESCRIPTION CARD – MODULE 5

<b>Field of study</b>	International Interdisciplinary Summer School "Energy-efficient construction, users and environment friendly"						<b>Programme type</b>	Summer course
<b>Module name</b>	Energy efficient lighting of the building						<b>Course code</b>	IISS2026-M5
							<b>Course type</b>	obligatory
<b>Forms and number of hours of tuition</b>	<b>L</b>	<b>LC</b>	<b>P</b>	<b>SW</b>	<b>FW</b>	<b>V</b>	<b>Language</b>	English
	1	3	4					
<b>Course objectives</b>	Understanding basic definitions and concepts, as well as current guidelines for modern indoor lighting. Acquiring knowledge and skills allowing for conscious assessment of needs, designing lighting, and measuring lighting parameters in accordance with the latest knowledge and requirements.							
<b>Course content</b>	Lecture: Overview of the basic parameters and requirements for interior lighting design. Assessment methods and criteria of energy efficiency in interior lighting.							
	Project: Methods for estimating the required luminous flux. Overview of the basic calculation tools available in DIALux software – geometrical modelling, materials modelling, modelling of electric lighting, and interaction with materials. Case study work. Energy efficiency evaluation. Discussion.							
	Laboratory: Performing measurements and calculations of selected parameters characterizing light sources (luminous flux, colorimetric parameters), luminaires (luminous intensity distribution), and luminous environment (illuminance distribution, illuminance uniformity, luminance, unified glare index). Energy efficiency analysis. Discussion on the results of measurements and calculations. Preparing reports describing the results of the laboratory and project activities. Final test.							
<b>Teaching methods</b>	Lecture, laboratory, carrying out a design work, discussion							
<b>Assessment method</b>	Design work defence, evaluation of final reports, test							
<b>Symbol of learning outcome</b>	<b>Learning outcomes</b>						<b>Reference to the learning outcomes for the field of study</b>	
<b>L01</b>	The graduate knows and understands the principles of operation and exploitation of modern light sources and systems						K_IISS_W02, K_IISS_W10	
<b>L02</b>	The graduate knows the latest trends in sustainable interior lighting design						K_IISS_W01, K_IISS_W05, K_IISS_W10, K_IISS_W12	
<b>L03</b>	The graduate knows and uses tools of computer aided design of interior lighting						K_IISS_W03, K_IISS_U04	
<b>L04</b>	The graduate understands and can properly select the technical conditions for designing lighting system in the						K_IISS_U02, K_IISS_U04, K_IISS_U07	

	interior		
L05	The graduate can correctly evaluate and propose the lighting system in accordance with the latest standards and innovations	K_IISS_U02, K_IISS_U03, K_IISS_U07	
L06	The graduate can plan and perform measurements to evaluate the quality of interior lighting	K_IISS_U01	
L07	The graduate understands and correctly applies non-technical aspects in lighting design	K_IISS_K01, K_IISS_K02	
<b>Symbol of learning outcome</b>	<b>Methods of assessing the learning outcomes</b>	<b>Type of tuition during which the outcome is assessed</b>	
L01	discussion during laboratory and project workshops, test	LC, P	
L02	discussion during laboratory and project workshops, final report for the project and laboratory workshop	P, LC	
L03	Discussion during design workshop	P	
L04	discussion during design and laboratory workshop	P, LC	
L05	discussion during design and laboratory workshop	P, LC	
L04	Discussion during laboratory workshop, final report for the laboratory	LC	
L05	discussion during laboratory and project workshops, final report for the project and laboratory workshop, test	LC, P	
<b>Student workload (in hours)</b>		<b>No. of hours</b>	
<b>Calculation</b>	Reading before lecture and practical classes.	4	
	Participation in the lecture.	1	
	Participation in design workshop.	4	
	Participation in laboratory workshop.	3	
	Preparing reports.	6	
	Completing the design exercise.	6	
	Consultation.	1	
<b>TOTAL:</b>		25	
<b>Quantitative indicators</b>		<b>HOURS</b>	<b>No. of ECTS credits</b>
<b>Student workload – activities that require direct teacher participation</b>		9	0,36
<b>Student workload – practical activities</b>		24	0,96
<b>Basic references</b>	<ol style="list-style-type: none"> <li>Boyce P.: Human factors in lighting, CRC Press, 2014</li> <li>EN 12464-1 2021 - Light and lighting — Lighting of work places Part 1. Indoor work places, 2021</li> <li>EN 15193 - Energy performance of buildings — Energy requirements for lighting</li> <li>van Bommel, W.: Interior Lighting: Fundamentals, Technology and Application, Springer, 2019</li> <li>Sansoni P. et.al.: Sustainable Indoor Lighting, Springer, 2015</li> </ol>		
<b>Organisational unit conducting</b>	Department of Photonics, Electronics and Lighting Technology, BUT with participation	<b>Date of issuing the programme</b>	

<b>the course</b>	of abroad expert	
<b>Author of the programme</b>	Dr inż. Urszula Błaszczak Mgr Walenty Askirka Dr Francesca Diglio, Italy	03.12.2025

L – lecture, LC – laboratory classes, P – project, SW – specialization workshop, FW - field work