



## Subject card

|   |  |  |   |                                     |  |            |     |
|---|--|--|---|-------------------------------------|--|------------|-----|
| Subject name and code                       | Wiring Systems and Lighting Technology, PG_00053195  |  |   |                                     |  |            |     |
| Field of study                              | Electrical Engineering   |  |   |                                     |  |            |     |
| Date of commencement of studies             | October 2023   |  | Academic year of realisation of subject   |                                     | 2025/2026  |            |     |
| Education level                             | first-cycle studies  |  | Subject group   |                                     | Obligatory subject group in the field of study<br>Subject group related to scientific research in the field of study |            |     |
| Mode of study                               | Full-time studies  |  | Mode of delivery  |                                     | at the university  |            |     |
| Year of study                               | 3  |  | Language of instruction   |                                     | Polish<br>-  |            |     |
| Semester of study                           | 5  |  | ECTS credits  |                                     | 4.0  |            |     |
| Learning profile                            | general academic profile   |  | Assessment form   |                                     | exam   |            |     |
| Conducting unit                             | Department of Electrical Power Engineering -> Faculty of Electrical and Control Engineering  |  |   |                                     |  |            |     |
| Name and surname of lecturer (lecturers)    | Subject supervisor   |  | prof. dr hab. inż. Stanisław Czapp  |                                     |  |            |     |
|   | Teachers   |  |   |                                     |  |            |     |
| Lesson types and methods of instruction     | Lesson type  | Lecture  | Tutorial  | Laboratory                          | Project  | Seminar    | SUM |
|   | Number of study hours  | 30.0   | 0.0   | 0.0                                 | 30.0   | 0.0        | 60  |
|   | E-learning hours included: 0.0   |  |   |                                     |  |            |     |
| Learning activity and number of study hours | Learning activity  | Participation in didactic classes included in study plan |   | Participation in consultation hours |  | Self-study | SUM |
|   | Number of study hours  | 60   |   | 5.0                                 |  | 35.0       | 100 |
| Subject objectives                          | Acquiring skills in designing electrical installations.  |  |   |                                     |  |            |     |
| Learning outcomes                           | Course outcome   |  | Subject outcome   |                                     | Method of verification   |            |     |
|   | K6_W11   |  | The student specifies types of electrical lighting sources and describes its construction. Specifies photometric quantities. Student specifies types of conductors and protective devices. Analyses costs of installations operation with various types of electrical lighting sources. |                                     | [SW3] Assessment of knowledge contained in written work and projects   |            |     |
|   | K6_U10   |  | The student individually performs project of electrical installation.   |                                     | [SU4] Assessment of ability to use methods and tools   |            |     |
|   | K6_K02   |  | The student performs calculation of lighting illuminance, also with the use of specialist software. Student performs selection of protective devices and conductors.  |                                     | [SK2] Assessment of progress of work   |            |     |
| Subject contents                            | <p>LECTURE Electrical installation. Low-voltage distribution and equipment. Wiring systems. Cables and cable components. Cables in fire hazard. Overcurrent and earth-leakage protection. Fuses and circuit-breakers applications. Motor control gear, contactors and protective relays, solid state equipment, remote control schemes. Discrimination, back-up protection, series rated system. Protection and control of current-using equipment. Installation planning examples: domestic premises, public buildings, high-rise buildings, hospitals, intelligent building. Electric lighting. Light and vision. Photometric quantities, units and concepts. Colour qualities, colour temperature and colour rendering index. Types of light sources and luminaries. Construction and operation, properties. Distortion of voltage and current. Lighting design technology. Calculations of illumination. Selection luminaries. Economic factors. Maintenance costs.</p> <p>PROJECT Performance of the project of electrical installation in building. The scope of the project is also lighting calculation using DIALux software.</p> |  |   |                                     |  |            |     |
| Prerequisites and co-requisites             |  |  |   |                                     |  |            |     |

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| Assessment methods and criteria                                | Subject passing criteria  | Passing threshold  | Percentage of the final grade |
|  | Project   | 100.0%   | 50.0%                         |
|  | Exam  | 50.0%  | 50.0%                         |
| Recommended reading  | Basic literature  | 1. Bąk J. Pabjańczyk W.: Podstawy techniki świetlnej. Politechnika Łódzka, Łódź 1994.<br>2. Markiewicz H.: Instalacje elektryczne. PWN, Warszawa, 2018.<br>3. Musiał E.: Instalacje i urządzenia elektroenergetyczne. WSiP, Warszawa, 2008.<br>4. Żagan W.: Podstawy techniki świetlnej. Oficyna Wydawnicza Politechniki Warszawskiej, Warszawa, 2005. |                               |
|  | Supplementary literature  | 1. Gabryjelski Z., Kowalski Z.: Sieci i urządzenia oświetlniowe. Politechnika Łódzka, Łódź 1997.<br>2. Żagan W.: Iluminacja obiektów. Oficyna Wydawnicza Politechniki Warszawskiej, Warszawa, 2003   |                               |
|  | eResources addresses  | Adresy na platformie eNauczanie:   |                               |
| Example issues/<br>example questions/<br>tasks being completed | Test:<br><br>1. The mark 36W/960 on the fluorescent lamp informs that:<br><br>a) This is the lamp with colour temperature equal to 960 K<br><br>b) This is the lamp with colour temperature equal to 9600 K<br><br>c) This is the lamp with colour rendering index equal to 96<br><br>2. The mark YAKY 5×120 mm <sup>2</sup> informs that:<br><br>a) This is one power cable with five conductors<br><br>b) These are five power cables (each with one conductor)<br><br>c) This is power cable with identical cross-section of phase conductors, and conductor PE has cross-section equal to 120 mm <sup>2</sup> |  |                               |
| Work placement   | Not applicable  |  |                               |