Załącznik nr 2 do Zarządzenia Nr 915 z 2019 r. Rektora PB

**COURSE DESCRIPTION CARD**

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| **Faculty of Electrical Engineering** |
| **Field of study** | **Electrical and Electronic Engineering** | **Degree level and programme type** | **bachelor's degree, full time programme** |
| **Specialization/ diploma path** | **-** | **Study profile** | **-** |
| **Course name** | **Basics of lighting technology** | **Course code** | **IS-FEE-10002W** |
| **Course type** | **elective** |
| **Forms and number of hours of tuition**  | **L** | **C** | **LC** | **P** | **SW** | **FW** | **S** | **Semester** | **winter** |
| **30** |  | **15** |  |  |  |  | **No. of ECTS credits** | **5** |
| **Entry requirements** | **-** |
| **Course objectives** | **Familiarizing students with basic light quantities, units and electric light sources. Using luxmeter and luminance meter. Teaching the methodology of main photometric measurements. Familiarizing with current problems in illuminating engineering. .** |
| **Course content** | **Vision and light. Basic light quantities and units (luminous flux, luminous intensity, illuminance, luminance). Spectral distribution of light quantities. Lambert law. Correlation between illuminance and distance from the source. Types and parameters of light sources. Spatial distribution of light intensity. Basic measurements in light technology. Procedures of chosen light measurements. Using chosen light meters (luxmeter, luminance meter). Standarization in lighting technology - introduction to lighting design. Light - human interaction. Energy efficiency in lighting.** |
| **Teaching methods** | **laboratory experiments, lecture/consultations, self-work, discussion.** |
| **Assessment method** | **lecture: written exam; laboratory class: verification of preparation for classes, evaluation of the reports.** |
| **Symbol of learning outcome**  | **Learning outcomes** | **Reference to the learning outcomes for the field of study** |
| **LO1** | **lists and explains light quantities;** |  |
| **LO2** | **shortly characterizes electrical and optoelectronic light sources;** |  |
| **LO3** | **can use the lightmeter and luminance meter;** |  |
| **LO4** | **performs measurements of chosen light quantities;** |  |
| **LO5** | **can provide simple calculations connected with lighting.** |  |
| **Symbol of learning outcome** | **Methods of assessing the learning outcomes** | **Type of tuition during which the outcome is assessed** |
| **LO1** | **exam, evaluation of the report on exercise, a discussion during the laboratory classes** | **L,LC** |
| **LO2** | **exam, evaluation of the report on exercise, a discussion during the laboratory classes** | **L,LC** |
| **LO3** | **observation during the laboratory classes, reports** | **LC** |
| **LO4** | **observation during the laboratory classes, reports** | **LC** |
| **LO5** | **observation during the laboratory classes, reports, evaluation of case studies** | **L,LC** |
| **Student workload (in hours)** | **No. of hours** |
| **Calculation** | **participation in the laboratory** | **15** |
| **preparation for the laboratory** | **15** |
| **description of laboratory reports** | **10** |
| **participation in lecture / student - teacher consultations** | **30** |
| **preparing to pass the exam** | **20** |
| **case studies/homeworks** | **40** |
| **TOTAL:** | **130** |
| **Quantitative indicators** | **HOURS** | **No. of ECTS credits** |
| **Student workload – activities that require direct teacher participation** | **45** | **2** |
| **Student workload – practical activities** | **85** | **4** |
| **Basic references** | **1. Standard CIE S 017/E:2011: International Lighting Vocabulary, 2011.** **2. IESNA Lighting Handbook, New York, 2000.** **3. Winchip S.: Fundamentals of lighting. Fairchild Books, 2011.** **4. Lighting fundamentals handbook (technical report). Electric Power Research Institute, 1992.** **5. Ryer A.: Light measurement handbook. International Light, 1998.** **6. Ganslandt R., Hoffmann H.: Handbook of lighting design. 1992.** **7. Khan T.Q. LED Lighting - Technology and Perception, Wiley 2015** |
| **Supplementary references** | **1. Taylor A.: Illumination fundamentals. Lighting Research Center, 2000.** **2. Csele M.: Fundamentals of light sources and lasers. Wiley Interscience, 2004.** |
| **Organisational unit conducting the course** | **Department of Photonics, Electronics and Light Technique** | **Date of issuing the programme** |
| **Author of the programme** | **Urszula Błaszczak, Ph.D. Eng.** | **30.01.2020** |

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

**S – seminar**