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

**COURSE DESCRIPTION CARD**

|  |
| --- |
| **Faculty of Electrical Engineering** |
| **Field of study** | **Electrical and Electronics Engineering** | **Degree level and programme type** | **bachelor's degree, full time programme** |
| **Specialization/ diploma path** | **-** | **Study profile** | **-** |
| **Course name** | **Electrical Machines 2** | **Course code** | **IS-FEE-10029S** |
| **Course type** | **elective** |
| **Forms and number of hours of tuition**  | **L** | **C** | **LC** | **P** | **SW** | **FW** | **S** | **Semester** | **summer** |
| **30** |  | **30** |  |  |  |  | **No. of ECTS credits** | **6** |
| **Entry requirements** | **Electrical Machines 1** |
| **Course objectives** | **Achievement of skills of analysis of DC and synchronous machines.** |
| **Course content** | **DC machines: construction, principles of operation, mathematical model. Direct current machine systems. Steady state with different conditions of power supply and load. Synchronous machines: construction, principles of operation and mathematical models. Torque of synchronous machines. Generators and motors.** |
| **Teaching methods** | **lecture, laboratory class** |
| **Assessment method** | **lecture: written exam; laboratory class: evaluation of reports, verification of preparation for classes.** |
| **Symbol of learning outcome**  | **Learning outcomes** | **Reference to the learning outcomes for the field of study** |
| **LO1** | **selects the measurement methods for basic research of electrical machines, analyzes test results, assesses the state of saturation of the magnetic circuit;** |  |
| **LO2** | **selects speed control methods for DC machines, interprets the behavior of the DC machines for various values of supplying voltages and load torque;** |  |
| **LO3** | **interprets influence of changes in the excitation current and load torque for synchronous generators and DC machines;** |  |
| **LO4** | **describes the actual status and construction development trends in electrical machines;** |  |
| **LO5** | **associates the connection of electrical machines with other areas of knowledge in the discipline of electrical engineering;** |  |
| **LO6** | **can work in an organized laboratory group.** |  |
| **LO7** |  |  |
| **Symbol of learning outcome** | **Methods of assessing the learning outcomes** | **Type of tuition during which the outcome is assessed** |
| **LO1** | **evaluating student's preparation for laboratory tests, exam** | **L, LC** |
| **LO2** | **evaluating student's preparation for laboratory tests, exam** | **L, LC** |
| **LO3** | **evaluating student's preparation for laboratory tests, exam** | **L, LC** |
| **LO4** | **exam** | **L** |
| **LO5** | **exam** | **L** |
| **LO6** | **discussion on the report of the laboratory tests, observation of work in the laboratory** | **LC** |
| **LO7** |  |  |
| **Student workload (in hours)** | **No. of hours** |
| **Calculation** | **lecture attendance** | **30** |
| **participation in workshop activities** | **30** |
| **preparation for classes** | **30** |
| **preparation for and participation in exams/tests** | **30** |
| **elaboration of workshop's reports** | **30** |
|  |  |
|  |  |
| **TOTAL:** | **150** |
| **Quantitative indicators** | **HOURS** | **No. of ECTS credits** |
| **Student workload – activities that require direct teacher participation** | **60** | **2** |
| **Student workload – practical activities** | **90** | **3** |
| **Basic references** | **1. Morris N.: Electrical & electronic engineering principles. Longman Group, 1994.** **2. Ryff P. F.: Electric machinery. Prentice Hall, New Jersey, 1988.** **3. Theodore W.: Electrical machines, drives and power systems. Pearson Education, New Jersey, 2006.** |
| **Supplementary references** | **1. Sen P. G.: Principles of electric machines and power electronics. J. Wiley & Sons, 1997.** **2. Chapman S. J.: Electric machinery fundamentals. Mc Graw Hil, 2005.** **3. Morris N. M.: Electrical and electronic engineering principles. Longman Group, 1994.** |
| **Organisational unit conducting the course** | **Department of Electrotechnics, Power Electronics and Power Engineering** | **Date of issuing the programme** |
| **Author of the programme** | **Adam Sołbut, Ph.D. Eng.** | **05.02.2020** |

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

**S – seminar**