

FACULTY OF ELECTRICAL
ENGINEERING**SUBJECT CARD**

Name in Polish: **Eksplotacja urządzeń elektroenergetycznych**
 Name in English: **Operation and maintenance of electrical equipments**
 Main field of study (if applicable): **Electrical Engineering**
 Specialization (if applicable): **Electrical Power Engineering**
 Level and form of studies: **2nd level, part-time**
 Kind of subject: **optional**
 Subject code: **ELR052474**
 Group of courses: **NO**

	Lecture	Classes	Laboratory	Project	Seminar
Number of hours of organized classes in University (ZZU):	22				
Number of hours of total student workload (CNPS):	60				
Form of crediting:	crediting with grade				
For group of courses mark (X) final course:					
Number of ECTS points:	2				
including number of ECTS points for practical (P) classes :					
including number of ECTS points for direct teacher-student contact (BK) classes:	1.40				

PREREQUISITES RELATING TO KNOWLEDGE, SKILLS AND OTHER COMPETENCES

1. Knowledge of principles of operation and design of electrical power equipments.
2. Knowledge of principles of electrical power management
3. Student is able to measure electrical parameters, then carry out their analysis and make conclusions.
4. Student is open minded and ready to follow new trends.
5. Student is able to work effectively in a team.

SUBJECT OBJECTIVES

- C1. Students will recognize the principles of rational operation of electrical equipments.
 C2. Students will recognize the modern diagnostics methods of electrical equipments.
 C3. Students will recognize the methods how to determine operational reliability of electrical equipments.

SUBJECT LEARNING OUTCOMES*relating to knowledge:*

- PEU_W01 Student is familiar with the basic principles of operation of electrical equipments.
 PEU_W02 Student is familiar with operational diagnostics of electrical equipments.
 PEU_W03 Student is familiar with operational reliability of electrical equipments.

*relating to skills:**relating to social competences:*

- PEU_K01 Student thinks creatively and logically.

PROGRAMME CONTENT		
Form of classes - lecture		Number of hours:
Lec 1	Theoretical basics on operation of electrical equipment (use, maintenance, operation). Laws regulating operation of electrical equipment.	2
Lec 2	Strategies of use of electrical equipments.	2
Lec 3	Strategies of maintenance (repairs, servicing) of electrical equipments.	2
Lec 4	Management of electrical equipment's operation in context of QMS and controlling demand for electrical power.	2
Lec 5	Operational documentation of electrical equipments.	2
Lec 6	Principles of writing operation manuals in accordance to QMS requirements.	2
Lec 7	Basics of operational diagnostics.	2
Lec 8	Modern methods of operational diagnostics of: power grids, transformers, switchgears, engines, electric installations etc.	2
Lec 9	Theoretical basics of operational reliability of electrical equipments.	2
Lec 10	Issues in reliability calculation. Reliability structures. Determination of characteristics of operational reliability of electrical equipments.	2
Lec 11	Test	2
Total hours:		22

TEACHING TOOLS USED
N1. Informative lectures N2. Multimedia presentations N3. Problem-solving lectures

EVALUATION OF SUBJECT LEARNING OUTCOMES ACHIEVEMENT		
Evaluation <i>F - forming (during semester)</i> <i>P - concluding (at semester end)</i>	Educational effect number	Way of evaluating educational effect achievement
F1(w)	PEU_W01 PEU_W02 PEU_W03 PEU_K01	test
P(w)	P=F1	

PRIMARY AND SECONDARY LITERATURE
PRIMARY LITERATURE: Lesiński S.: Podstawy eksploatacji i niezawodności urządzeń elektrycznych. WU ATR, Bydgoszcz 1989 Maksymiuk J.: Niezawodność maszyn i urządzeń elektrycznych. OW PW, Warszawa 2003 Florkowska B.: Diagnostyka wysokonapięciowych układów izolacyjnych urządzeń elektroenergetycznych. Wydawnictwo AGH, Kraków 2009 SECONDARY LITERATURE: Matulewicz W.: Diagnostyka transformatorów energetycznych. WPG, Gdańsk 1998 Szymaniec S.: Diagnostyka stanu izolacji uzwojeń i stanu łożysk silników indukcyjnych klatkowych w warunkach przemysłowej eksploatacji. Studia i Monografie z.193. Oficyna Wydawnicza Politechniki Opolskiej, Opole 2006

SUBJECT SUPERVISOR
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