

FACULTY OF ELECTRICAL
ENGINEERING**SUBJECT CARD**

Name in Polish: **Elektroenergetyka zakładów przemysłowych**
 Name in English: **Electric power industries**
 Main field of study (if applicable): **Electrical Engineering**
 Specialization (if applicable):
 Level and form of studies: **1st level, full-time**
 Kind of subject: **optional**
 Subject code: **ELR052403**
 Group of courses: **NO**

	Lecture	Classes	Laboratory	Project	Seminar
Number of hours of organized classes in University (ZZU):	30				
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 basic mathematical analysis and statistics.
2. Knowledge of principles of operation and design of electrical power equipment.
3. Knowledge of theoretical electrical engineering.
4. Student is able to make deductions based on statements.
5. Student can analyze, synthesize, evaluate.
6. Student is open minded and ready to follow new trends..
7. Student is able to work effectively in a team.

SUBJECT OBJECTIVES

- C1. Students will recognize the principles of operation of electrical power policy in industrial setting.
- C2. Students will know how to calculate forecasted loads of current.
- C3. Students will recognize the issues concerning reliability of electrical energy supply to whole industrial plants, as well as particular networks and devices.
- C4. Students will be prepared to solve problems related to the quality of electrical energy in industrial setting.
- C5. Students will be prepared to solve problems related to management of supplying reactive power to industrial customers.

SUBJECT LEARNING OUTCOMES*relating to knowledge:*

- PEU_W01 Student knows the basic principles of operation of electrical power policy in industry.
- PEU_W02 Student defines the parameters of electrical power quality and explains their influence on the operation of specific devices to which electrical power is delivered.
- PEU_W03 Student explains rational management of reactive and active power and differentiates methods of compensation of reactive power.

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

- PEU_K01 Student is creative in solving electrical engineering problems.

PROGRAMME CONTENT		
Form of classes - lecture		Number of hours:
Lec 1	General characteristics of industrial plants as electrical power consumers.	2
Lec 2	General principles of electrical power management in industry.	2
Lec 3	Power load charts and load and simultaneousness indices.	4
Lec 4	Methods of forecasting power loads.	4
Lec 5	Criteria of choice applied to electrical power networks and its components.	4
Lec 6	Reliability of industrial power supply.	2
Lec 7	Quality of electrical power. Influences of deviations and variations in voltage, asymmetry, non-sinusoidal states and frequency changes on devices to which electrical power is received.	4
Lec 8	Adjustment of voltage in industrial power networks.	2
Lec 9	Forecasting load and consumption of power.	2
Lec 10	Managing reactive power.	2
Lec 11	Test	2
Total hours:		30

TEACHING TOOLS USED
N1. Informative lectures N2. Multimedia presentation 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: Teresiak Z.(red.) :Elektroenergetyka zakładów przemysłowych. Wyd. P. Wr., Wrocław 1981 Matla R.: Gospodarka elektroenergetyczna. Oficyna Wydawnicza P.W., Warszawa 1988 Bujko J., Hejnowicz G.: Projektowanie przemysłowych stacji elektroenergetycznych. Wydawnictwo P.Wr. , Wrocław 1989. Math H. J. Bollen, Irene YU-Hua Gu: Signal processing of power quality disturbances, . Published by John Wiley & Sons in Canada, 2006 SECONDARY LITERATURE: Hofmann W., Schlabbach J., Just W.: Reactive Power Compensation: A Practical Guide. Published by John Wiley & Sons, London, UK, 2012 Kujaszczyk S. (red.) Elektroenergetyczne układy przemysłowe, WNT, Warszawa, 1997

SUBJECT SUPERVISOR
Grażyna Dąbrowska-Kauf, grazyna.dabrowska-kauf@pwr.edu.pl