

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, part-time**  
 Kind of subject: **optional**  
 Subject code: **ELR042463**  
 Group of courses: **NO**

	Lecture	Classes	Laboratory	Project	Seminar
Number of hours of organized classes in University (ZZU):	20				
Number of hours of total student workload (CNPS):	108				
Form of crediting:	examination				
For group of courses mark (X) final course:					
Number of ECTS points:	4				
including number of ECTS points for practical (P) classes:					
including number of ECTS points for direct teacher-student contact (BK) classes:	2.80				

**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 EDUCATIONAL EFFECTS***relating to knowledge:*

- PEK\_W01 Student knows the basic principles of operation of electrical power policy in industry.
- PEK\_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.
- PEK\_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:*

- PEK\_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.	2
Lec 4	Methods of forecasting power loads.	2
Lec 5	Criteria of choice applied to electrical power networks and its components.	2
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.	2
Lec 8	Adjustment of voltage in industrial power networks.	2
Lec 9	Forecasting load and consumption of power. Managing reactive power.	2
Lec 10	Test	2
Total hours:		<b>20</b>

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

EVALUATION OF SUBJECT EDUCATIONAL EFFECTS 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)	PEK_W01 PEK_W02 PEK_W03 PEK_K01	test
P(w)	P=F1	

PRIMARY AND SECONDARY LITERATURE
<b>PRIMARY LITERATURE:</b> Teresiak Z.(red.) :Elektroenergetyka zakładów przemysłowych. Wyd. P. Wr., Wrocław 1981 Matla R.: Gospodarka elektroenergetyczna. Oficyna Wydawnicza PW, Warszawa 1988 Bujko J., Hejnowicz G.: Projektowanie przemysłowych stacji elektroenergetycznych. Wyd. 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 <b>SECONDARY LITERATURE:</b> 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
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MATRIX OF CORRELATION BETWEEN EDUCATIONAL EFFECTS FOR SUBJECT  
**ELR042463 - Electric power industries**  
AND EDUCATIONAL EFFECTS FOR MAIN FIELD OF STUDY **Electrical Engineering**

Subject educational effect	Correlation between subject educational effect and educational effects defined for main field of study and specialization (if applicable)	Subject objectives	Programme content	Teaching tool number
PEK_W01	K1ETK_EEN_W06	C.1 C.2 C.3	Lec1 Lec2 Lec3 Lec4 Lec5 Lec6 Lec9	N.1 N.2 N.3
PEK_W02	K1ETK_EEN_W06	C.4	Lec7	N.1 N.2 N.3
PEK_W03	K1ETK_EEN_W06	C.5	Lec8 Lec9	N.1 N.2
PEK_K01	K1ETK_K06 K1ETK_K07	C.1 C.2 C.3 C.4 C.5	Lec3 Lec4 Lec6 Lec9 Lec10	N.3