FACULTY OF ELECTRICAL ENGINEERING

SUBJECT CARD

Name in Polish:	**Zarządzanie w elektroenergetyce**
Name in English:	**Electrical Power Systems Management**
Main field of study (if applicable):	**Electrical Engineering**
Specialization (if applicable):	**Control in Electrical Power Engineering**
Level and form of studies:	**2nd level, full-time**
Kind of subject:	**obligatory**
Subject code:	**ELR042532**
Group of courses:	**NO**

	Lecture	Classes	Laboratory	Project	Seminar
Number of hours of organized classes in University (ZZU):	15				15
Number of hours of total student workload (CNPS):	30				30
Form of crediting:	crediting with grade				crediting with grade
For group of courses mark (X) final course:					
Number of ECTS points:	1				1
including number of ECTS points for practical (P) classes :					1
including number of ECTS points for direct teacher-student contact (BK) classes:	0.70				0.70

PREREQUISITES RELATING TO KNOWLEDGE, SKILLS AND OTHER COMPETENCES

1. The student should has a basic knowledge of linear electrical circuit theory
2. The student should has a basic knowledge of the power system operation and electricity generating technologies and electric power transmission.
3. The student should has a basic knowledge of the steady-state and transient short circuit linear analysis applied in modern power systems.
4. It has sufficient range of language tools to correct pronouncement and write, formulate and motivate opinions, to explain his point of view, to present disadvantages and advantages of various solutions, to participate in discussion and to present general, scientific and technical problems.
5. Can use basic hardware and software, create, edit texts and create computer presentations.
6. He has an awareness of responsibility for his work.

SUBJECT OBJECTIVES

C1. Getting to know the problems of organization and management of the electricity sector and energy company.

C2. The student should demonstrate the ability to analyze the key strategies of deregulation and restructuring of the electricity sector and the development of electricity markets.

C3. The student should learn the basic problems of power system control applications.

SUBJECT EDUCATIONAL EFFECTS

relating to knowledge:

PEK_W01	Student has knowledge on the scope of organizing and management power sector companies.
PEK_W02	Knows the market mechanisms for electricity trading.
PEK_W03	Has a knowledge of power system operation risk assessment.

relating to skills:

PEK_U01	Student can identify, analyze and evaluate complex management problems under different operating conditions of the power system.
PEK_U02	He can make a strategic analysis of the organization and its environment. He can performs the audit functioning of the organization.

relating to social competences:

PEK_K01	Student show the readiness to identify, critical analyze and decide the appearing problems in the site of work. Student be able to evaluate of effect of taking up decisions.

PROGRAMME CONTENT		
Form of classes - lecture		**Number of hours:**
Lec 1	Structure of power sector, components of this structure, definition and their function.	1
Lec 2	Electrical power system management, what is management. Define of the term management, planning, organizing, directing and controlling.	1
Lec 3	Electricity reform, main steps in this reform - restructuring, deregulation, competition and markets, ownership.	1
Lec 4	Management of the power system in normal operation condition.	2
Lec 5	Legal regulations concerning the operation of the power sector.	1
Lec 6	Crisis management of the power system - in pre-fault, fault states.	1
Lec 7	The development of electricity markets, examples of the markets models.	2
Lec 8	Crisis management of the power system - post-fault states.	2
Lec 9	The role of independent system operators and energy regulators	1
Lec 10	System planning under competition, integrated resources planning, demand side management.	2
Lec 11	Final test	1
	Total hours:	**15**

Form of classes - seminar		**Number of hours:**
Sem 1	Acquainted with the program of the seminar, requirements and formative assessment. Seminar topic selection.	1
Sem 2	Project ideas presentations related to the organization of the electricity power sector - part 1.	2
Sem 3	Project ideas presentations related to the organization of the electricity power sector - part 2.	2
Sem 4	Project ideas presentations related to the organization of the electricity power sector - part 3.	2
Sem 5	Project ideas presentations related to the organization of the electricity power sector - part 4.	2
Sem 6	Project ideas presentations related to the organization of the electricity power sector - part 5.	2
Sem 7	Project ideas presentations related to the organization of the electricity power sector - part 6.	2
Sem 8	Repetition and summing up.	2
	Total hours:	**15**

TEACHING TOOLS USED

N1. Lecture with the use of audiovisual techniques, multimedia presentations.
N2. Case study.
N3. Problem discussion.

EVALUATION OF SUBJECT EDUCATIONAL EFFECTS ACHIEVEMENT		
Evaluation *F – forming (during semester)* *P – concluding (at semester end)*	**Educational effect number**	**Way of evaluating educational effect achievement**
F1(W)	PEK_W01 PEK_W02 PEK_W03 PEK_K01	Final test
P(W)	P=F1	
F1(S)	PEK_U01 PEK_U02	Activity on seminar classes.
F1(S)	PEK_U01 PEK_U02	Preparing and presenting a presentation.
P(S)	P=0.2F1+0.8F2	

PRIMARY AND SECONDARY LITERATURE

PRIMARY LITERATURE:

[1] Malko J., Wilczyński A., Rynki energii – działania marketingowe. Oficyna Wydawnicza Politechniki Wrocławskiej, Wrocław 2006.
[2] S. Hunt, G. Shuttleworth: Competition and choice in electricity, John Wiley & Sons, Chichester - New York - Weinheim - Brisbane - Singapore - Toronto, 1997.
[3] M. Ilic, F. Galiana, L. Fink: Power systems restructuring, engineering and economics, KLUWER Academic Publishers, Boston - Dordrecht - London, 1998.
[4] Directive 2003/54/EC of the European Parliament and of the Council, of 26 June 2003, concerning common rules for the internal market in electricity and repealing Directive 96/92/EC.
[5] Philipson L., Willis H. L.: Understanding Electric Utilities and De-Regulation. Marcel Dekker, Inc., New York 1999.

SECONDARY LITERATURE:

[1] Chochowski A, Krawiec Fr., Zarządzanie w energetyce. Difin, Warszawa 2008.
[2] Czasopisma: Rynek Energii, IEEE Power & Energy, Power Engineering

SUBJECT SUPERVISOR
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MATRIX OF CORRELATION BETWEEN EDUCATIONAL EFFECTS FOR SUBJECT
ELR042532 - Electrical Power Systems Management
AND EDUCATIONAL EFFECTS FOR MAIN FIELD OF STUDY **Electrical Engineering**
AND SPECIALIZATION **Control in Electrical Power 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	S2CPE_W10	C.1 C.2 C.3	Lec1 Lec3 Lec9	N.1 N.2 N.3
PEK_W02	S2CPE_W10	C.1 C.2	Lec3 Lec5 Lec7	N.1 N.2 N.3
PEK_W03	S2CPE_W10	C.1 C.3	Lec2 Lec4 Lec6 Lec8 Lec10	N.1 N.2 N.3
PEK_U01	S2CPE_U07 S2CPE_U11	C.1 C.2 C.3	Sem1 Sem2 Sem3 Sem4 Sem5 Sem6 Sem7	N.1 N.2 N.3
PEK_U02	S2CPE_U07 S2CPE_U11	C.1 C.2	Sem1 Sem2 Sem3 Sem4 Sem5 Sem6 Sem7	N.1 N.2 N.3
PEK_K01	K2ETK_K07	C.1 C.2	Lec11 Sem1 Sem2 Sem3 Sem4 Sem5 Sem6 Sem7 Sem8	N.1 N.2 N.3