STUDY MODULE DESCRIPTION FORM

Name of the module/subject		Code
Energy Market		**1010311461010316134**
Field of study: **Power Engineering**	Profile of study (general academic, practical): **general academic**	Year /Semester: **3 / 6**
Elective path/specialty: **-**	Subject offered in: **Polish**	Course (compulsory, elective): **obligatory**
Cycle of study: **First-cycle studies**	Form of study (full-time,part-time): **full-time**	
No. of hours: Lecture: **30** Classes: **-** Laboratory: **-** Project/seminars: **-**		No. of credits: **2**
Status of the course in the study program (Basic, major, other): **other**	(university-wide, from another field): **university-wide**	
Education areas and fields of science and art: **technical sciences** **Technical sciences**		ECTS distribution (number and %): **2 100%** **2 100%**

Responsible for subject / lecturer:

dr inż. Justyna Michalak
email: justyna.michalak@put.poznan.pl
tel. 616652030
Wydział Elektryczny
ul. Piotrowo 3A 60-965 Poznań

Responsible for subject / lecturer:

dr inż. E. Sroczan
email: eugeniusz.sroczan@put.poznan.pl
tel. 616652276
Wydział Elektryczny
ul. Piotrowo 3A 60-965 Poznań

Prerequisites in terms of knowledge, skills and social competencies:

1	**Knowledge**	Student has a knowledge in the scope of basis of power engineering, electric energy management, technology of processes in power engineering, and economy.
2	**Skills**	Student is able to determine relationships between business entities acting on market.
3	**Social competencies**	Student is ready to work in team and to make a decision

Assumptions and objectives of the course:

To acquaint the basic kinds and acting methods of power markets, allowing to understand their acting and to gain ability and competences allowing to evaluate power situation of country with reference to world trends, taking into account energy-consumption of production processes.

Study outcomes and reference to the educational results for a field of study

Knowledge:

1. Has a knowledge in the scope of basis structures of market and about basic processes on the electric power market, heat market and on the liquid fuels market. - [K_W06 +K_W22+++K_W23 ++]
2. Has a knowledge in the scope of balancing of energy generation and consumption. - [K_W07+K_W18+ K_W22+++]

Skills:

1. Is able to define regularity of behavior of consumer on market. Is able to define regularity of behavior of producer on perfect competition market, pure monopoly, monopoly competition and oligopoly. - [K_U08+K_U16+K_U20+]

Social competencies:

1. Has a consciousness of economy aspects of power company conducting on market. - [K_K02+K_K05++]

Assessment methods of study outcomes

Lecture

evaluation of knowledge and competitions by written test

permanent evaluation during every classes (rewarding for activity and particularly for proposing to discuss new aspects of problem)

Course description

Genesis of European energy markets. Profile of basic processes of energy market. Sections of energy market: electric energy, heat, fuels. Law regulations in energy sales. Energy exchange: basic functions of participants, offers, kinds of operations, cashing of transaction. Functions of operators: of transmission, distribution technical-commercial systems. Balancing of energy consumption in KSE. Principles of prices determining: of system services, of power and energy, of planning and conducting of work of production units (power plants), evaluation of risk level. Natural monopoly as a feature of energy conversion and delivering system Country system of registration of CO2 emission entitlement: profile, functions, equivalents in other energy market systems. Market controller. Functions of integrated control systems in power engineering implemented for energy market.

Basic bibliography:

1. Nowak B., Wewnętrzny rynek energii w Unii Europejskiej, Wydawnictwo C.H.Beck, 2009.

2. Pach-Gurgul A., Jednolity rynek energii elektrycznej w Unii Europejskiej w kontekście bezpieczeństwa energetycznego Polski, Wydawnictwo Difin, 2012,

3. CzarneckaM. (red.), Konsument na rynku energii elektrycznej, Wydawnictwo C.H.Beck, 2014..

4. Chochowski A., Krawiec F. (red), Zarządzanie w energetyce, Wydawnictwo Difin, Warszawa 2008.

Additional bibliography:

1. Ustawa z dnia 10 kwietnia 1997 r. PRAWO ENERGETYCZNE z Rozporządzeniami Ministra Gospodarki w sprawie szczegółowych zasad kształtowania i kalkulacji taryf oraz zasad rozliczeń w obrocie energia elektryczną.

2. Nagaj R., Regulacja rynku energii elektrycznej w Polsce - ex ante czy ex post, Wydawnictwo Naukowe Uniwersytetu Szczecińskiego, Szczecin 2016.

Result of average student's workload

Activity	Time (working hours)
1. participation in lectures	30
2. participation in tutorials related to lectures	7
3. preparation to exam	10

Student's workload

Source of workload	hours	ECTS
Total workload	47	2
Contact hours	37	1
Practical activities	0	0