STUDY MODULE DESCRIPTION FORM

Name of the module/subject	Code
Transfer and distribution of electric energy	**1010312421010313675**

Field of study	Profile of study (general academic, practical)	Year /Semester
Power Engineering	**(brak)**	**1 / 2**
Elective path/specialty	**Subject offered in:**	**Course (compulsory, elective)**
-	**Polish**	**obligatory**

Cycle of study:	Form of study (full-time,part-time)
Second-cycle studies	**full-time**

No. of hours	No. of credits
Lecture: **30** Classes: **-** Laboratory: **30** Project/seminars: **-**	**4**

Status of the course in the study program (Basic, major, other)	(university-wide, from another field)
(brak)	**(brak)**

Education areas and fields of science and art	ECTS distribution (number and %)

Responsible for subject / lecturer:

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Responsible for subject / lecturer:

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Prerequisites in terms of knowledge, skills and social competencies:

1	**Knowledge**	Possesses basic knowledge of the theory of electrical circuits, electromagnetic field, electrical machines, High voltage techniques, electric power engineering and electrical power generation
2	**Skills**	Has effective self-study ability in the domain of the chosen field of studies, is able to integrate the knowledge acquired at the credited courses
3	**Social competencies**	Is aware of the need to develop his knowledge and competencies, is ready to undertake the cooperation and team work

Assumptions and objectives of the course:

Getting knowledge of the parameters and tasks of the modern electric power systems, electric power transmission and distribution systems, AC transmission systems construction, impact of the AC lines on the natural environment, long and short distance transmission of the AC electric power, role of the DC transmission systems.

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

Knowledge:

1. Has elementary knowledge of fundamentals of the electric power engineering and electric power systems and grid - [K_W11 ++]
2. Has ordered knowledge of the electric, electronic and power electronic circuits theory as well as of the signal theory and signal processing techniques - [K_W17++]

Skills:

1. Can use acquired mathematical methods and models as well as the computer simulation to discuss and assess the operation of the electric power elements and systems - [K_U07 ++]
2. Can use properly chosen techniques and devices for measuring basic magnitudes describing power elements and systems - [K_U10++]

Social competencies:

1. Understands the need and knows opportunities of the continuous studies (second and third cycle studies, post-diploma, courses) - improving professional skills, personal and social - [K_K01 ++]

Assessment methods of study outcomes

Lectures:

1.Assesment of the knowledge and skills shown at the written and oral examinations ,

2.Continuous assessment during courses (bonus for activity and perception quality).

Laboratory:

1.Test of the knowledge necessary to deal with problems posed in the lab tasks.

2. Assessment of the knowledge and skills related to the lab task completion. Assessment of the task report.

Course description

Lectures with multimedia and interaction with a group supplemented by board: Power system tasks and parameters. Electric power transmission and distribution subsystems. Hierarchic structure of electric power grid. HV and LV AC transmission system construction, contemporary development trends.AC transmission theory fundamentals - wave phenomena, natural power. Means to upgrade the LV line transmission capacity. Power flow control in the HV and LV transmission network. DC electric power transmission. AC transmission systems? design fundamentals.

The lab includes exercises on physical models of high voltage lines (compensation). The study load-flow network nodes. Measurements of energy quality.

Basic bibliography:

1. Sz. Kujszczyk (pod red.): Elektroenergetyczne układy przesyłowe, WNT, Warszawa 1997.

2. A. Kordus (pod red.): Sieci elektroenergetyczne - przykłady wybranych zagadnień, WPP, Poznań 1990 r.

3. Poradnik Inżyniera Elektryka . t.3. WNT, Warszawa 2005

Additional bibliography:

1. J. Popczyk: Elektroenergetyczne układy przesyłowe, WPŚ, Gliwice 1984

2. S. Kończykowski: Obliczanie sieci elektroenergetycznych, t.II, PWN, Warszawa 1958

3. Jakość energii elektrycznej w aspekcie wytwarzania dystrybucji i użytkowania. Zeszyty Naukowe Wydziału Elektrotechniki i Automatyki Politechniki Gdańskiej nr 50/2016

Result of average student's workload

Activity	Time (working hours)
1. participation in lecture courses	30
2. participation in labs	15
3. participation in discussions related to lectures	4
4. participation in discussions related to labs	4
5. preparation to labs	13
6. lab reports? elaboration	15
7. preparation to examination	18
8. taking an examination	3

Student’s workload

Source of workload	hours	ECTS
Total workload	102	4
Contact hours	56	3
Practical activities	47	3