STUDY MODULE DESCRIPTION FORM

Name of the module/subject	Code
High current processes	**1010315341010306105**

Field of study	Profile of study (general academic, practical)	Year /Semester
Electrical Engineering	**(brak)**	**2 / 4**
Elective path/specialty: **Distribution Devices and Electrical**	Subject offered in: **Polish**	Course (compulsory, elective): **obligatory**

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

No. of hours	No. of credits
Lecture: **9** Classes: **-** Laboratory: **-** Project/seminars: **-**	**1**

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:

dr hab. inż. Jerzy Janiszewski
email: jerzy.janiszewski@put.poznan.pl
tel. 61 665 20 28
Faculty of Electrical Engineering
ul. Piotrowo 3A 60-965 Poznań

Prerequisites in terms of knowledge, skills and social competencies:

1	**Knowledge**	Basic knowledge of the construction and operation of electrical apparatus and installations, and measuring apparatus and its use (K_W11 +).
2	**Skills**	The ability to obtain information from the literature and critical analysis (K_U01 ++).
3	**Social competencies**	He understands the need to promote and implement the effects of technical progress (K_K02).

Assumptions and objectives of the course:

Reach expanded knowledge about the processes associated with the great currents and their influence on the design of the busbar

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

Knowledge:

1. Have an extended knowledge of dynamic and heat phenomena in the high current busbar and contact current; knowledge for construction of high-current circuits and their impact on the environment. - [[K_W05 +]]

Skills:

1. Can prepare a specification of complex equipment or electrical system; he knows the legal aspects, as well as other non-technical, such as the impact on the environment; able to use the standards for operation of electrical equipment. - [[K_U11 +]]

Social competencies:

1. Able to think and act in a professional manner and present their own ideas and take discussion of environmental technology. - [[K_K01 +]]

Assessment methods of study outcomes

- assessment of knowledge and skills on problematic discussions or on the basis of an example prepared by a student (project or program supporting elements of design)
- assessment of activity in each class, based on participation in the discussion of the presented concepts.

Course description

Phenomena in high-current busbars with special attention to skin and proximity effects. The impact of ferromagnetic masses on busbars current distribution. Distribution of current in multi-paths; energy flows between current lanes. Phenomena in contacts for very high conducting current ; high current arc. Presentation of design solutions for busbars and contact systems.

Basic bibliography:

1. Stanisław Kulas - Tory prądowe i układy zestykowe, Wydawnictwo Politechniki Warszawskiej, W-wa 2008
2. Janusz Turowski - Elektrodynamika techniczna, WNT W-wa 1967
3. Tadeusz Cholewicki - Elektrotechnika teoretyczna cz. II ? WNT W-wa 1971

Additional bibliography:

1. Maksymiuk J.: Aparaty elektryczne, PWN, Warszawa, 1995.
2. Sprawocznik po rasczietu i konstruirowaniu kontaktnych czastiej silnotocznych elektriczeskich aparatow, pod red. W.W. Afanasiewa, Energoizdat, Leningrad 1988 r.

Result of average student's workload

Activity	Time (working hours)
1. Participation in lecture classes	9
2. Consultation	3
3. Prepering for classes	152

Student's workload

Source of workload	hours	ECTS
Total workload	24	1
Contact hours	12	1
Practical activities	0	0