DESCRIPTION OF THE COURSES

- Course code: ELR 2306
- Course title: Static convertors - applications
- Language of the lecturer: polish

Course form	***Lecture***	***Classes***	***Laboratory***	***Project***	***Seminar***
*Number of hours/week**	*1*		*1*		
*Number of hours/semester**	*15*		*15*		
Form of the course completion	*Pass*		*Pass*		
ECTS credits	*1*		*1*		
Total Student's Workload	*30*		*30*		

- Level of the course (basic/advanced): advanced
- Prerequisites: Power electronics
- Name, first name and degree of the lecturer/supervisor: Stanisław Szkółka; Ph.D.
- Names, first names and degrees of the team's members: Józef Borecki, Ph.D.; Waldemar Dołęga, Ph.D.
- Year:....IV..... Semester:.....7.....
- Type of the course (obligatory/optional): obligatory
- Aims of the course (effects of the course):
- Form of the teaching (traditional/e-learning): traditional
- Course description:
  Selected applications of converters in industry. Influence of line-commutated converters on a power network. Uninterruptible power supply systems. Static conwerors in DC and AC drives. Static DC drivers of synchronous machines. Fast acting compensators of reactive power. Static convertors as a fault source in the power systems. Static convertors in the HVDC transmission of electrical energy
- Lecture:

Particular lectures contents		*Number of hours*
1.	Basic AC and DC regulators	*1*
2.	Basic applications in low voltage networks.	*1*
3.	Basic applications in automatic systems.	*1*
4.	Uninterruptible power supply systems – requirements.	*1*
5.	Uninterruptible power supply systems – structures.	*1*
6.	Static DC drivers of synchronous machines.	*1*
7.	Fast acting compensators of reactive power.	*1*
8.	Static convertors in the HVDC transmission of electrical energy.	*1,5*
9.	Static conwertors in DC and AC drives.	*1,5*
10.	Soft – Start convertors.	*0,5*
11.	Applications in chemical industry (i.g. galvanization).	*0,5*
12.	Static convertors for inductive heating	*0,5*

13.	Influence of line commutated convertors on a power network	*2*
14.	Develop tendencys of static convertors	*0,5*
15.	Pass	*1*

- Classes – the contents:
- Seminars – the contents:
- Laboratory – the contents: 6 exercises

1.	Fast acting compensators of reactive power	
2.	Static convertors in the HVDC transmission of electrical energy	
3.	Soft – Start convertors	
4.	Influence of line commutated convertors on a power network	
5.	12-pulse rectifiers	
6.	3-phase harmonic filters	

- Project – the contents:
- Basic literature:

1. A. M. TRZYNADLOWSKI, INTRODUCTION TO MODERN POWER ELECTRONICS; 1998
2. DANIEL W. HART, INTRODUCTION TO POWER ELECTRONICS; 1997
THOMAS H. BARTON, RECTIFIERS, CYCLOCONVERTERS, AND AC CONTROLLERS; 1994
3. Leistungselektronik – VEM Handbuch; VEB Verlag Technik Berlin 1978.
4. H.Supronowicz "Poprawa współczynnika mocy układów przekształtnikowych",WNT Warszawa 1981r.
5. P. Büchner "Stromrichter-Netzrückwirkungen und ihre Beherschung"Auflage VEB Deutscher Verlag für Grudstoffindustrie, Leipzig 1982.
6. B.M. Bird & K.G. King „An Introduction to Power Electronics" 1983 by J. Willey & Sons Ltd

- Additional literature:

1. JAYANT BALIGA, POWER SEMICONDUCTOR DEVICES; 1996
2. LASZLO TIHANYI, ELECTROMAGNETIC COMPATIBILITY IN POWER ELECTRONICS, 1995

- Conditions of the course acceptance/credition:

***** - depending on a system of studies