

DESCRIPTION OF THE COURSES

- Course code: ARR 2302
- Course title: Static convertors in automatic
- Language of the lecturer: polish

<i>Course form</i>	<i>Lecture</i>	<i>Classes</i>	<i>Laboratory</i>	<i>Project</i>	<i>Seminar</i>
<i>Number of hours/week*</i>	1		1		
<i>Number of hours/semester*</i>	15		15		
<i>Form of the course completion</i>	Pass		Pass		
<i>ECTS credits</i>	2		2		
<i>Total Student's Workload</i>	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:.....III..... Semester:.....6.....
- Type of the course (obligatory/optional): optional
- Aims of the course (effects of the course):
- Form of the teaching (traditional/e-learning): traditional
- Course description:
Selected applications of converters in automatic. Static converters in automatic of DC and AC drives. Influence of line-commutated converters on a power network. Uninterruptible power supply systems for automatic equipment. 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:

	<i>Particular lectures contents</i>	<i>Number of hours</i>
1.	Basic AC and DC regulators	1
2.	Basic applications in automatic systems.	1
3.	Contactless circuit breakers in the automatic low-voltage electrical apparatuses	1,5
4.	Uninterruptible power supply systems – structures and requirements for automatic equipment	2
5.	Static DC drivers of synchronous machines.	1
6.	Fast acting compensators of reactive power.	1,5
7.	Static convertors in the HVDC transmission of electrical energy.	1,5
8.	Static converters in DC and AC drives.	1,5
9.	Influence of line commutated convertors on a power network and automatic equipment.	1,5

10.	Protection equipment due to decreasing the negative influence on automatic equipment.	1,5
11.	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. Alain Charoy „Compatibilité électromagnétique – Parasites et perturbations des électroniques” Dunod, Paris 1992.
3. P. Büchner “Stromrichter-Netzrückwirkungen und ihre Beherrschung” Auflage VEB Deutscher Verlag für Grundstoffindustrie, Leipzig 1982.
4. 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
 3. Daniel W. Hart, Introduction to power electronics; 1997
- Thomas h. Barton, Rectifiers, cycloconverters, and ac controllers; 1994

- Conditions of the course acceptance/creditation:

* - depending on a system of studies