

DESCRIPTION OF THE COURSES

- Course code: ELR 2304
- Course title: Power electronic II
- 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>			2		
<i>Number of hours/semester*</i>			30		
<i>Form of the course completion</i>			Pass		
<i>ECTS credits</i>			2		
<i>Total Student's Workload</i>			60		

- Level of the course (basic/advanced): basic
- Prerequisites: Power electronic
- 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.; Antoni Klajn, Ph.D.
- Year:....III..... Semester:.....6.....
- 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:

Power semiconductor devices. Naturally commutating converters: uncontrolled and controlled rectifier under R, RL load. Inversion. Single- and three-phase A.C. regulators. Cycloconverter. D.C switching regulators. Static power inverters. PWM inverters (pulse-width modulation). Influence of line-commutated converters on a power network. Selected applications of converters in industry.

- Lecture:
- Classes – the contents:
- Seminars – the contents:
- Laboratory – the contents:

Laboratory - 12 exercises, using real physical models:	
1. Control circuits of line-commutated converters	
2. 1- and 2 pulse uncontrolled rectifiers	
3. 1- and 2 pulse controlled rectifiers	
4. 3- and 6- pulse uncontrolled rectifiers	
5. 3- and 6- pulse controlled rectifiers	

6. Single-phase A.C. regulators.	
7. The McMurray inverter	
8. D.C/DC step down regulators.	
9. D.C/DC step up regulators.	
10. 1-phase PWM inwerter	
11. Step down cycloconverter	
12. Influence of line-commutated converters on a power network	

- Project – the contents:

- Basic literature:

1. A. M. TRZYNADLOWSKI, INTRODUCTION TO MODERN POWER ELECTRONICS; 1998
2. DANIEL W. HART, INTRODUCTION TO POWER ELECTRONICS; 1997
3. THOMAS H. BARTON, RECTIFIERS, CYCLOCONVERTERS, AND AC CONTROLLERS; 1994
4. B.M.Bird & K.G.King Power electronics 1983.

- Additional literature:

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

- Conditions of the course acceptance/creditation:

Passing grades of quizzes.

* - depending on a system of studies