

DESCRIPTION OF THE COURSES

- Course code: ARR 3318
- Course title: Basic Electronics Engineering 1
- 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>	<i>1</i>		<i>1</i>		
<i>Number of hours/semester*</i>	<i>15</i>		<i>15</i>		
<i>Form of the course completion</i>	<i>colloquium</i>		<i>note</i>		
<i>ECTS credits</i>	<i>2</i>		<i>1</i>		
<i>Total Student's Workload</i>	<i>30</i>		<i>30</i>		

- Level of the course (basic/advanced):
Basic information about electronic elements and their applications: amplifiers, switches.

- Prerequisites: Course Fundamental of electrical Engineering
- Name, first name and degree of the lecturer/supervisor: Piotr Madej / PhD
- Names, first names and degrees of the team's members:
- Year:.....I..... Semester:.....2.....
- Type of the course (obligatory/optional): obligatory
- Aims of the course (effects of the course):

Daniel Dusza	PhD
Andrzej Kałwak	PhD
Grzegorz Kosobudzki	PhD
Krzysztof Podlejski	PhD

- Form of the teaching (traditional/e-learning): traditional
- Course description:
Modern electronic elements: diode, transistor – bipolar and unipolar J-FET, MOSFET. Elementary electronic circuits: signal amplifiers – unistage and multistage, differential. Electronic switches: bipolar, unipolar MOS, CMOS. Analog and digital switches: design, characteristics.
- Lecture:

<i>Particular lectures contents</i>	<i>Number of hours</i>
1. Introduction. Semiconductor: n and p type P-N junction. Reverse and forward polarity of the junction.	2
2. Semiconductor diodes: rectifying, detection, impulsive, Zenner. Electrical specifications.	2
3. Bipolar transistor: principles, design and electrical specification. Polarization of npn and pnp transistor. Simple model and signal parameters.	2
4. Bipolar transistor as OE, OC, amplifier. Polarization principles, design, applications. Electrical characteristic.	2
5. Unipolar transistors: J-FET and MOS-FET. Principles, design, electrical specifications, applications. OS and OD amplifier. Signal characteristics.	2
6. Multistage signal amplifier. Types of the understage coupling. Simplified circuit	

and parameters	
7. Electronic switches: bipolar, unipolar N-MOS, C-MOS. Analog and digital switches: design, characteristics.	2
8. Colloquium	2
	2
	1

- Classes – the contents:
- Seminars – the contents:
- Laboratory – the contents:
 1. Introduction. Organization.
 2. Characteristics of the diode: germanium, silicon and LED.
 3. Bipolar amplifier OE and OC. Polarization.
 4. Two-stage amplifier with galvanic understage coupling.
 5. Electronic switches: bipolar, unipolar MOS, CMOS. Analog and digital switches: design, characteristics.
- Project – the contents:
- Basic literature:
 1. Tietze U., Schenk C.: Układy półprzewodnikowe. WNT Warszawa 1996.
 2. Horowitz P., Hill W.: Sztuka elektroniki cz.I, WKŁ Warszawa 1997.
 3. Nadachowski M., Kulka Z.: Analogowe układy scalone. WKŁ Warszawa 1985.
 4. Baranowski J., Czajkowski G.: Układy elektroniczne. Cz.II. WNT Warszawa 1993.
 5. Chwaleba A., Moeske B.: Pracownia elektroniczna. Część II: Układy elektroniczne. WSP Warszawa 1983.
- Additional literature:
 1. Borkowski A.: Zasilanie urządzeń elektronicznych. WKŁ Warszawa, 1990.
 2. Rusek M., Pasierbiński J.: Elementy i układy elektroniczne w pytaniach i odpowiedziach. WNT Warszawa, 1991.
 3. Filipkowski A.: Układy elektroniczne analogowe i cyfrowe. WNT Warszawa, 1980
- Conditions of the course acceptance/creditation: colloquium, 100% acceptance of laboratory classes.

* - depending on a system of studies