DESCRIPTION OF THE COURSES

- Course code: **ARR3310**
- Course title: **ANALOG – TO – DIGITAL AND DIGITAL – TO – ANALOG CONVERTERS**
- 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	*test*		*completion*		
ECTS credits					
Total Student's Workload					

- Level of the course (basic/advanced): advanced
- Prerequisites: Electrical measuring. Basics of electronic.
- Name, first name and degree of the lecturer/supervisor: Wojciech Grotowski Ph.D.
- Names, first names and degrees of the team's members: Jerzy Leszczyński Ph.D.
- Year:4..... Semester:.....
- Type of the course (obligatory/optional): optional
- Aims of the course (effects of the course): Knowledge analog-to-digital and digital-to-analog transformation, working knowledge of selecting the right type transducer in given situations.
- Form of the teaching (traditional/e-learning): traditional
- Course description: Basic methods of analog – to – digital and digital – to analog conversions, codes used converters, main subassemblies, parameters of converters and examples of solutions of converter systems, measuring and converter testing methods, examples of application. Laboratory exercises relating to the subject of lectures.
- Lecture:

Particular lectures contents	*Number of hours*
1. Analog – to – digital and digital – to analog converters – significance and functions of converters, sampling, quantization, signal coding. Basic constructional subassemblies of converters	2
2. Sampling – memorizing systems, their parameters, types of analog sampling – memorizing systems, digital sampling – memorizing systems	2
3. Digital – to – analog converters, their types, basic parameters of digital – to – analog converters	2
4. Analog – to digital converters, methods of conversion – classification of methods, examples of constructional solutions	2
5. Parameters of analog – to – digital converters, practical parameters of converters, static and dynamic errors	2
6. Measurements of analog – to – digital and digital – to – analog converters, measurements of static parameters, measurements of dynamic parameters, automatic testing of converters	2
7. Exemplery applications of analog – to – digital and digital – to – analog converters	2
8. Test	1

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

Contents of the laboratory include running converters, selection of elements and their influence on practical parameters, determination of metrological properties.

1. Determination of metrological characteristic of integrated converter ICL7107
2. Compensating converter, selection of system parameters, conversion errors
3. Application of CA converter to electrical signal syntesis. Determination of converter dynamic parameters.
4. Study of digital voltmeter based on AC integrated converter
5. Analog – to – digital voltage – to – frequency converters applied to non-electrical value

measurement

- Project – the contents:
- Basic literature:

1. Kulka, A. Libura, M. Nadachowski: Przetworniki analogowo-cyfrowe i cyfrowo-analogowe, WKiŁ, Warszawa 1987.
2. M. Łakomy, J. Zabrodzki; Scalone przetworniki analogowo-cyfrowe i cyfrowo-analogowe; PWN, Warszawa 1992.

- Additional literature:

1. J. Kołodziejski, L. Spiralski, E. Stolarski; "Pomiary przyrządów półprzewodnikowych", WKŁ, Warszawa 1990.
2. S. Socolf; "Zastosowanie analogowych układów scalonych", WKŁ, Warszawa 1991

- Conditions of the course acceptance/credition:

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