DESCRIPTION OF THE COURSES

Course code

ARR 2508

Course title: **Measurements and automation in power plants**

Name, first name and degree of the lecturer/ supervisor

Mieczysław KOZAK   **Ph.D.**

Names, first names and degrees of the team's members

HENRYK Wojciechowski   **Ph.D.**

Form in which the courses should be completed

Course form	Lecture	Exercises	Laboratory	Project	Seminar
Number of hours / week	2	1			
Number of hours/semester*	30	15			
Form of the course completion	Colloquium	Colloquium			
ECTS credits	6	3			
Total Student's Workload	180	90			

- Level of the course (basic)
- Prerequisites: Backgrounds of power processes. Control theory. Control objects in power plants.
- Name, first name and degree of the lecturer/supervisor: Mieczysław KOZAK, Ph.D.
- Names, first names and degrees of the team's members: Henryk WOJCIECHOWSKI, Ph.D.
- Year: III Semester: 6/I
- Type of the course (optrional)
- Aims of the course (effects of the course): General analysis of automatic control structures of technolgogical process.
- From of the teaching (traditional)
- Course description: Methods and measurement systems of basic technological parameters power station (temperature, pressure, flow stream, height of fuluid level, chemical constitution of combustion flue gases). Identification of control objects in power plants using analogue and digital methods. Automatic control of b asic operation parameters systems (pressure, power, temperature, etc.). Present-day tendency of modification of analogu UAR strutures including digital microprocessors (controllers).

Lecture

	Particular lectures contents	Number of hours
1.	Level and flow intensity measurements	2
2.	Temperature and pressure measurements	2

3.	Chemical constitution of combustion flue gases measurements	2
4.	Chosen problems of control theory (reminding)	2
5.	Power plant co-operation in power system load-frequency control	2
6.	Fuel feed control	2
7.	Water feed control	2
8.	Steam pressure control including accumulation of steam boiler	2
9.	Control of stem temperature	2
10.	Control of incoming air	2
11.	Control of steam	2
12.	Heat-mechanical protection of power unit	2
13.	Modernisation of analogue sets and designing of digital microprocessors	2
14.	Sets linearization, optimal control, state observers	2
15.	Colloquium	2

- Classes – the contents: Simulation of dynamical processwes in complex physical sest (heat-energy process set of power plant generation).
- A. Negrusza and M. Sąsiadek: Miernictwo energetyczne, Pomiary podstawowych wielkości z zakresu techniki cieplnej. Skrypt P.Wr. Wrocław 1977
- Rakowski J. Aautomatyka cieplnych urządzeń siłowni. WNT Warszawa 1975
- Virk G.S. Digital Computer Controlo Systems. Macmallan Press 1991
- Additional literature: Findeisen W., Technika regulacji automatycznej, PWN Warszawa 1978
- Conditions of the course acceptance: Lecture – credit colloquium

* - depending on a system of studies