

(faculty stamp)

COURSE DESCRIPTION

Z1-PU7

WYDANIE N1

Strona 1 z 2

1. Course title: FUNDAMENTALS OF AUTOMATICS		2. Course code		
3. Validity of course description: 2012/2013				
4. Level of studies: 1st cycle of higher education				
5. Mode of studies: intramural studies				
6. Field of study: POWER ENGINEERING				(FACULTY SYMBOL)
7. Profile of studies: general academic				
8. Programme: Sustainable Energy Engineering				
9. Semester: 4				
10. Faculty teaching the course: IMiUE - ZMiPE				
11. Course instructor: dr inż. Piotr Ostrowski, doc.w Pol.Śl.				
12. Course classification: major subjects				
13. Course status: compulsory				
14. Language of instruction: English				
15. Pre-requisite qualifications: Basic Courses + subjects: Thermodynamics + Fluid Mechanics + Heat Flow + Electrical and Electronics + Heat Measurements				
16. Course objectives: Familiar with the technique of automatic regulation and control				
17. Description of learning outcomes:				
Nr	Learning outcomes description	Method of assessment	Teaching methods	Learning outcomes reference code
1.	The student has knowledge of fluid mechanics, thermodynamics and heat transfer technology and mass transfer.	Short tests during the semester.	Lecture + Classes	K_W17
2.	The student has knowledge of the phenomena and the physical and chemical processes occurring in the internal and external environment, as well as the measurement techniques used to determine the parameters that describe them .	Short tests during the semester.	Lecture + Classes	K_W09
3.	The student understands the basic issues in the field of electrical engineering and electronics.	Short tests during the semester.	Lecture + Classes	K_W14
4.	The student can apply basic measurement and analytical techniques used in engineering and environmental protection.	Short tests during the semester.	Lecture + Classes	K_U14
5.	The student can use the knowledge of fluid mechanics, thermodynamics and heat transfer to solve simple problems.	Short tests during the semester.	Lecture + Classes	K_U18
6.	Student is able to assess the functioning of existing technologies, facilities, systems and processes used in environmental engineering.	Short tests during the semester.	Lecture + Classes	K+U22
7.				
8.				
18. Teaching modes and hours				
Lecture 30 / BA /MA Seminar / Class 15 / Project / Laboratory 15				
19. Syllabus description:				
Lecture:				
1st Basic concepts				
2nd Linearization				
3rd Laplace transformation				
4th Writing dynamic properties				
5th Elements of automation				
6th The dynamics of processes				
7th Closed loop control systems				

8th Stability and quality of control
 9th Regulators
 10th Setting elements: valves, actuators, positioners,
 12th Logic Circuits
 13th Safety of machines and processes
 14th Programmable controllers, visualization and distributed control systems

Laboratory:
 Identification of transfer function parameters. Logic Circuits. Control valves. Controllers. Control systems modeling. Tuning controllers. Programmable controllers. Visualization of the control.

Classes:
 Laplace. Linearization. Calculation of the transmittance of typical elements of automation. Timing and frequency. The equation of the closed control circuit. Calculation of the static error. Examination of the stability control system. Calculation of the control sequence.

20. Examination: no

21. Primary sources:
 Ferenc M.: Podstawy automatyki. Skrypt uczelniany Pol.Śl. nr 1003, Gliwice 1981
 Praca zbiorowa pod red. St. Kopecia: Programowany zbiór zadań z podstaw automatyki. Skrypt uczelniany Pol.Śl. nr 1669, Gliwice 1994
 Żelazny M.: Podstawy automatyki, PWN, Warszawa 1976

22. Secondary sources:
 Newsletters and Catalogues of automation equipment manufacturers.

23. Total workload required to achieve learning outcomes

Lp.	Teaching mode :	Contact hours / Student workload hours
1	Lecture	30/30
2	Classes	15/30
3	Laboratory	15/30
4	Project	/
5	BA/ MA Seminar	/
6	Other	/
	Total number of hours	60/90

24. Total hours: 150

25. Number of ECTS credits: 5

26. Number of ECTS credits allocated for contact hours: 3

27. Number of ECTS credits allocated for in-practice hours (laboratory classes, projects): 3

26. Comments:

Approved:

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 (date, Instructor's signature)

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 (date, the Director of the Faculty Unit signature)