(*faculty stamp*)

Z1-PU7	WYDANIE N1	Strona 1 z 2

COURSE DESCRIPTION

1. Course title: COMPUTER DESIGN SYSTEMS	**2. Course code**
3. Validity of course description: from 2014/2015	
4. Level of studies: BA, BSc programme / MA,MSc programme lub 1st cycle / 2nd cycle of higher education	
5. Mode of studies: intramural studies / extramural studies	
6. Field of study: MECHANICS AND MACHINE DESIGN	(FACULTY SYMBOL)
7. Profile of studies: general	
8. Programme:	
9. Semester: 5	
10. Faculty teaching the course: Institute of Power Engineering and Turbomachinery	
11. Course instructor: Sebastian Lepszy PhD	
12. Course classification: professionals	
13. Course status: compulsory /elective	
14. Language of instruction: English	
15. Pre-requisite qualifications: English knowledge on B1 level, basics of thermodynamics, fluid dynamics, heat transfer, turbomaschinery	
16. Course objectives: knowledge way to design and modeling machines and power equipment using computer programs	
17. Description of learning outcomes:	

Nr	Learning outcomes description	Method of assessment	Teaching methods	Learning outcomes reference code
1.	Characteristic of different ways of describing state parameters and calorific functions of gas models	Test	Lecture	K_W22
2.	Describtion of mathematical modeling phenomena and parameters in the power equipment	Test	Lecture	K_W22
3.	Building models of machinery and energy equipment using computer programs	Raport/test	Laboratory	K_U11, K_U21
4.	Able to analyze the work of machines, equipment and energy systems for load changes with the use of computer programs	Raport /test	Laboratory	K_U11, K_U21
5.	Making mass and energy balances machinery and equipment and energy systems	Raport/test	Laboratory	K_U11, K_U21
6.				
7.				
8.				

18. Teaching modes and hours

Lecture / BA /MA Seminar / Class / Project / Laboratory

19. Syllabus description:

Lecture: Ways of describing the parameters of thermodynamic factors used in computer programs. Mathematical methods describe the influence of load changes on the parameters of a heat exchanger, compressor, turbine, a steam turbine.
Laboratory: Modeling and simulation of system components gas in the EBSILON.Modeling and simulation of system components steam power plant in the EBSILON. The use of different models of gas turbines for modeling and simulation power plants. Modeling and gym steam boilers using EBSILON program. Modeling of machinery and energy equipment using Aspen Plus program. Modeling of systems with organic factor in the Aspen Plus. Process modeling burning gaseous fuels in the Aspen Plus. Modeling of combustion and gasification of steel in the Aspen Plus. Design of the heat exchanger using the Aspen Plus software.

20. Examination: no

21. Primary sources:

1. Chmielniak T.: Technologie energetyczne. WNT, Warszawa 2008
2. T. J. Chmielniak, A. Rusin, K. Czwiertnia: Turbiny Gazowe. Maszyny przepływowe tom 25. Zakład Narodowy im. Ossolińskich – Wydawnictwo, Wrocław 2001

22. Secondary sources:

23. Total workload required to achieve learning outcomes

Lp.	Teaching mode :	Contact hours / Student workload hours
1	Lecture	15/15
2	Classes	/
3	Laboratory	45/40
4	Project	/
5	BA/ MA Seminar	/
6	Other	5/
	Total number of hours	65/55

24. Total hours:120

25. Number of ECTS credits: 4

26. Number of ECTS credits allocated for contact hours: 2

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)*