(faculty stamp)

COURSE DESCRIPTION

Z1-PU7 WYDANIE N1 Strona 1 z 3

1.0	Course title: METHODS OF TESTING EXPLO	SIVES	2. Course coo	le:
3. V	alidity of course description: 2019/2020			
4. L	evel of studies: 1 st cycle of higher education	on		
5. N	fode of studies: intramural studies / indivi	dual studies		
6. F	ield of study: CHEMISTRY (CHEMIA)			
7. P	rofile of studies: general			
8. P	rogramme:			
9. S	emester: VII			
10.	Faculty teaching the course: Department	of Inorganic Chemist	try, Analytical	Chemistry and
Eleo	ctrochemistry (RCH1)			
11.	Course instructor: Tomasz Jarosz, Ph. D., 1	M. Eng., assistant		
12.	Course classification: common courses			
13.	Course status: elective			
14.	Language of instruction: English			
15.	Pre-requisite qualifications:			
16.	Course objectives: Introduction to the method	ods and instruments use	d to test explos	ives and other blasting
ager	its.		I	6
17.	Description of learning outcomes:			
Nr	Learning outcomes description	Method of assessment	Teaching methods	Learning outcomes reference code
1	Knowledge of fundamental rules and guidelines for work safety and hygiene, safe handling of chemicals, sorting and disposal of chemical waste, according to pro- environmental regulations	Final test	Lecture	K_W16++ K_W22+ K_U10++
2	Knowledge of the techniques and methodology of investigating raw materials, prodcuts, chemical processes and unit operations	Final test	Lecture	K_W01+ K_W07++ K_U08++
3	Can determine the basic properties and reactivity of inorganic and organic compounds, in terms of thermodynamics and kinetics	Final test	Lecture	K_W14+ K_U01++
4	Can work as part of a team when conducting experiments and during interpretation and discussion of their results; is aware of the responsibility for jointly undertaken tasks	Evaluation based on work during classes, presentation	Laboratory class, Seminar	K_U19+ K_U08+ K_K02++
5	Is aware of the responsibility for undertaken initiatives related to research, experiments or observations; understands the social aspects of the practical application of acquired knowledge and skills, as well as the responsibility for doing so	Evaluation based on work during classes	Laboratory class	K_W17+ K_K06++

6	Is capable of acquiring information from available literature, databases and other sources, critically evaluating it and preparing opinions or reports based on this information	Presentation	Seminar	K_U17+ K_U19+ K_U20++ K_U28++	
18. Teaching modes and hours					

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

Lecture 14 Laboratory 12 Seminar 4

19. Syllabus description:

Methods of regulatory and control testing of: explosives, directional charges, powder fuses, detonating cords, blasting caps, igniters, electrical igniters, delay systems and detonators. Chemical analysis of explosives.
Parameters of explosives: detonation velocity, boundary and critical velocity. Static and quasi-static processes.
Dependene of the detonation velocity of an explosive on density. Influence of other parameters on detonation velocity. Theoretical and experimental methods of evaluating the parameters of explosives.
20. Examination: no

21. Primary sources:

- 1. R. Meyer, J. Köhler, A. Homburg, Explosives, Wiley-VCH Verlag GmbH & Co., 2002
- 2. Transport of Dangerous Goods, United States Publication, New York, 1990
- 3. Energetic Materials Analysis, Characterization and Test Techniques, Fraunhofer Institut fur Chemische Technologie, 1994
- C. L. Madder, Numerical modeling of explosives and propellants, Taylor & Francis Group LLC, 2008

22. Secondary sources:

- 1. B. T. Federoff, O. E. Sheffield, Encyclopedia of Explosives and Related Items, Picatinny Arsenal, Dover, New Jersey, USA, 1972
- 2. R. Cheret, High-Pressure Shock Compression of Condensed Matter, Springer-Verlag New York, Inc., 1993

23. Total workload required to achieve learning outcomes

Lp.	Teaching mode:	Contact hours/ Student workload hours
1	Lecture	14/14
2	Classes	_/_
3	Laboratory	12/12
4	Project	_/_
5	BA/MA Seminar	4/4
6	Other	/-
	Total number of hours	30/30
24. To	tal hours: 60	
25. Nu	mber of ECTS credits: 2	
)	mhow of ECTS anodits allocated for as	anto at house 1

26. Number of ECTS credits allocated for contact hours: 1

27. Number of ECTS credits allocated for in-practice hours (laboratory, classes, projects): 0,5

26. Comments:

Approved:

(date, Instructor's signature)

(date, the Director of the Faculty Unit signature)