

(faculty stamp)

COURSE DESCRIPTION

Z1-PU7

WYDANIE N1

Strona 1 z 3

1. Course title: ANALYTICAL CHEMISTRY		2. Course code		
3. Validity of course description: 2019/2020				
4. Level of studies: 1 ST CYCLE OF HIGHER EDUCATION				
5. Mode of studies: INTRAMURAL STUDIES				
6. Field of study: INDUSTRIAL AND ENGINEERING CHEMISTRY		(FACULTY SYMBOL) RCH		
7. Profile of studies: GENERAL				
8. Programme: - Specialization: -				
9. Semester: IV				
10. Faculty teaching the course: FACULTY OF INORGANIC CHEMISTRY, ANALYTICAL CHEMISTRY AND ELECTROCHEMISTRY				
11. Course instructor: HANNA BARCHAŃSKA, PhD, DSc, Eng				
12. Course classification: MODULE: COMMON SUBJECT COMPONENT:				
13. Course status: COMPULSORY				
14. Language of instruction: ENGLISH				
15. Pre-requisite qualifications: PRINCIPLES OF GENERAL CHEMISTRY, SUBJECT: GENERAL AND INORGANIC CHEMISTRY				
16. Course objectives: TO FAMILIARIZE STUDENTS WITH <ul style="list-style-type: none"> FUNDAMENTAL PRINCIPLES OF ANALYTICAL CHEMISTRY, CHEMICAL METHODS OF QUANTITATIVE ANALYSIS (GRAVIMETRY AND VOLUMETRIC ANALYSIS) 				
17. Description of learning outcomes:				
Nr	Learning outcomes description	Method of assessment	Teaching methods	Learning outcomes reference code
1.	Student has ordered, with theoretical background general knowledge of inorganic, organic, physical and analytical chemistry as well as process engineering	Exam	Lecture	K_W07+
2.	Student has elemental knowledge within the scope of techniques and methods of characterizing as well as identification of chemical products	Exam, colloquium	Lecture, laboratory	K_W10+
3.	Student is a team- worker as well as self - reliant	Colloquium	Laboratory	K_U02++
4.	Student understands the necessity of supplementing his education and improving of his professional and personal competences. Student motivates his co - workers	Exam	Lecture, laboratory	K_K01++
5.	Student is aware of personal responsibility of common tasks, that are connected with team -work	Colloquium	Laboratory	K_K04++
18. Teaching modes and hours 1 h LECTURE, 2 h LABORATORY				

19. Syllabus description:**Semester 4:****LECTURE:**

1. Introduction, classification of analytical chemistry;
2. Analytical errors, accuracy, representativeness, precision, robustness, sensitivity, selectivity;
3. Sampling and samples;
4. Gravimetry;
5. Acid – base equilibria and titration;
6. Redox equilibria and titration;
7. Complexes in analytical chemistry – complexometric titration;
8. Precipitation methods;
9. Sample preparation;
10. Speciation and speciation analysis;
11. Certified reference materials;

LABORATORY: students carry out gravimetric and volumetric analysis related to subject matter of lectures.

1. Gravimetry;
2. Neutralisation methods;
3. Redox titration: (chromatometry, manganometry, iodometry);
4. Complexometric titration;
5. Precipitation methods.

20. Examination: NO**21. Primary sources:**

- R. Kellner (editor) Analytical Chemistry, New York, John Wiley & Sons, 2004.
- M. Valcarcel, Principles of Analytical Chemistry, Springer, Berlin, 2000.

22. Secondary sources:

- K. Rubinson, J. Rubinson, Contemporary Instrumental Analysis, Upper Saddle River, Prentice Hall, 2000.

23. Total workload required to achieve learning outcomes

Lp.	Teaching mode :	Contact hours / Student workload hours
1	Lecture	15/15
2	Classes	0/0
3	Laboratory	30/30
4	Project	0/0
5	BA/ MA Seminar	0/0
6	Other	20/10
	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: 3****27. Number of ECTS credits allocated for in-practice hours (laboratory classes, projects):1****26. Comments:**

Approved:

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(date, Instructor's signature)

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(date , the Director of the Faculty Unit signature)