

DESCRIPTION OF THE COURSE OF STUDY

Course code	0531-2CHEM-C05-WPA	
Name of the course in	Polish	Walidacja procedur analitycznych
	English	Validation of analytical procedures

1. LOCATION OF THE COURSE OF STUDY WITHIN THE SYSTEM OF STUDIES

1.1. Field of study	Chemistry
1.2. Mode of study	Full-time studies
1.3. Level of study	Second cycle
1.4. Profile of study*	General academic
1.5. Person/s preparing the course description	Sabina Dołęgowska
1.6. Contact	Sabina.Dolegowska@ujk.edu.pl; tel. 41-349-70-23

2. GENERAL CHARACTERISTICS OF THE COURSE OF STUDY

2.1. Language of instruction	Polish, English
2.2. Prerequisites*	-

3. DETAILED CHARACTERISTICS OF THE COURSE OF STUDY

3.1. Form of classes	Lecture, exercises
3.2. Place of classes	Courses in the teaching rooms of UJK
3.3. Form of assessment	Lecture: exam Exercises: credit with grade
3.4. Teaching methods	Lecture: informative lecture Exercises: solving problems, discussion
3.5. Bibliography	Required reading Konieczka P., Namieśnik J. Quality assurance and Quality Control in the Analytical Chemical Laboratory. A practical approach. Tylor and Francis Group, LLC. 2009. Konieczka P., Namieśnik J. Ocena i kontrola jakości wyników pomiarów analitycznych. Wyd. Nauk.-Techn. Warszawa. 2014 Wyznaczanie niepewności w pomiarach analitycznych. Biuletyn informacyjny klubu POLLAB 1/54/2016 ISSN 1428-6009.
	Further reading EURACHEM/CITAC Guide. Quantifying uncertainty in analytical measurement. 2 nd edition. 2000. International vocabulary of metrology – Basic and general concepts and associated terms (VIM), 3 rd edition. 2008.

4. OBJECTIVES, SYLLABUS CONTENT AND INTENDED LEARNING OUTCOMES

4.1. Course objectives (including form of classes) C1. Lecture – Validation and verification of analytical procedures. Measurement uncertainty. C2. Exercises – Assessment of analytical procedures. Estimation of validation parameters and measurement uncertainty.
4.2. Treści programowe (z uwzględnieniem formy zajęć) <i>Lecture:</i> Method validation. Characterization of validation parameters. Systematic error. Revalidation. Validation report. Analytical procedures. Quality control and quality assurance system. Traceability. Reference materials. Interlaboratory comparisons. Measurement uncertainty (standard, combined and expanded uncertainty). <i>Exercises:</i> Calculation of validation parameters. Assessment of analytical procedures based on validation parameters. Methods of estimating measurement uncertainty.

4.3. Intended learning outcomes

Code	A student, who passed the course	Relation to learning outcomes
within the scope of KNOWLEDGE:		
W01	Knows the validation parameters	CHEM2A_W08
W02	Knows the quality assurance and quality control system	CHEM2A_W08
W03	Knows statistical methods used for estimation of measurement uncertainty	CHEM2A_W08
within the scope of ABILITIES:		
U01	Can calculate validation parameters	CHEM2A_U09
U02	Can critically evaluate the results of measurements	CHEM2A_U06
U03	Can estimate measurement uncertainty	CHEM2A_U06

within the scope of SOCIAL COMPETENCE :		
K01	Is aware of the need to check and evaluate analytical procedures by conducting validation studies	CHEM2A_K01

4.4. Methods of assessment of the intended learning outcomes		
Teaching outcomes (code)	Method of assessment (+/-)	
	Exam oral/written*	Test*
	<i>Form of classes</i>	<i>Form of classes</i>
	<i>L</i>	<i>E</i>
W01	+	+
W02	+	-
W03	+	+
U01	-	+
U02	-	+
U03	-	+
K01	+	-

**delete as appropriate*

4.5. Criteria of assessment of the intended learning outcomes		
Form of classes	Grade	Criterion of assessment
lecture (L) (including e-learning)	3	at least 50% and not more than 60% of the total number of available points
	3,5	more than 60% and not more than 70% of the total number of available points
	4	more than 70% and not more than 80% of the total number of available points
	4,5	more than 80% and not more than 90% of the total number of available points
	5	more than 90% of the total number of available points
exercises (E)* (including e-learning)	3	at least 50% and not more than 60% of the total number of available points
	3,5	more than 60% and not more than 70% of the total number of available points
	4	more than 70% and not more than 80% of the total number of available points
	4,5	more than 80% and not more than 90% of the total number of available points
	5	more than 90% of the total number of available points

5. BALANCE OF ECTS CREDITS – STUDENT’S WORK INPUT

Category	Student's workload	
	Full-time studies	Extramural studies
<i>NUMBER OF HOURS WITH THE DIRECT PARTICIPATION OF THE TEACHER /CONTACT HOURS/</i>	60	
<i>Participation in lectures*</i>	30	
<i>Participation in exercises*</i>	30	
<i>INDEPENDENT WORK OF THE STUDENT/NON-CONTACT HOURS/</i>	40	
<i>Preparation for the lecture*</i>	20	
<i>Preparation for the exercises*</i>	20	
<i>TOTAL NUMBER OF HOURS</i>	100	
ECTS credits for the course of study	4	

**delete as appropriate*

Accepted for execution (date and legible signatures of the teachers running the course in the given academic year)

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