<table>
<tr><td>NAME OF THE COURSE</td><td colspan="5">Development and optimization analytical chemical methods</td></tr>
<tr><td>Code</td><td>PPC221</td><td>Year of study</td><td colspan="3">3.</td></tr>
<tr><td>Course teacher</td><td>Ivana Mitar, assistant professor</td><td>Credits (ECTS)</td><td colspan="3">2.0</td></tr>
<tr><td rowspan="2">Associate teachers</td><td rowspan="2"></td><td rowspan="2">Type of instruction (number of hours)</td><td>L</td><td>S</td><td>E</td><td>F</td></tr>
<tr><td></td><td></td><td>30</td><td></td></tr>
<tr><td>Status of the course</td><td>elective</td><td>Percentage of application of e-learning</td><td colspan="3">40 %</td></tr>
<tr><td colspan="6">COURSE DESCRIPTION</td></tr>
<tr><td>Course objectives</td><td colspan="5">Acquire, understand, and apply basic theoretical knowledge of analytical chemistry using classical qualitative and quantitative methods of physicochemical analysis and instrumental methods for solving the problematic task of investigation.</td></tr>
<tr><td>Course enrolment requirements and entry competencies required for the course</td><td colspan="5">Passed courses Analytical Chemistry I and Analytical Chemistry II.</td></tr>
<tr><td>Learning outcomes expected at the level of the course (4 to 10 learning outcomes)</td><td colspan="5">The student is enabled to:
1. distinguish between quantitative and qualitative methods of analysis,
2. participate in the selection of the appropriate method of analysis according to the nature of the samples and the parameters of the investigation,
3. determine an appropriate method to solve a problem, and
4. 4.perform the experimental part of the investigation independently and participate in the interpretation of the results of the analysis.</td></tr>
<tr><td>Course content is broken down in detail by weekly class schedule (syllabus)</td><td colspan="5">The student chooses one of the problematic research tasks offered within the framework of analytical or instrumental methods of analysis. The task may be part of an ongoing scientific study or the development of analytical methods about which the student already has knowledge or experience, as an entry into a scientific thesis or dissertation. Under the supervision of the mentor, the student independently researches a literature review, sampling, method establishment, sample preparation and measurement, and interpretation of results. Upon completion of the experimental work, the student is required to write a detailed report on the experiment provided.</td></tr>
<tr><td>Format of instruction</td><td colspan="2">lectures
seminars and workshops
☐exercises
☐ on line in entirety
☐ partial e-learning
☐ field work</td><td colspan="3">☐ independent assignments
☐ multimedia
x laboratory
x work with a mentor
☐ (other)</td></tr>
<tr><td>Student responsibilities</td><td colspan="5">Students are required to participate in the teaching process actively. These will be recorded and evaluated when making the final grade</td></tr>
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Screening student work *(name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)*	Class attendance		Research	0.5	Practical training	
	Experimental work	1	Report		practical	
	Essay		Seminar essay	0.5	Oral exam	
	Tests		Oral exam		Report	
	Written exam		Project		(Other)	

Grading and evaluating student work in class and at the final exam	Practical work will be evaluated upon completion of the experimental section based on the student's dedication, effort, and independence from reviewing the literature to describing the experiment and results in a written report. The final grade will be based on the grade of the practical part, the written report, and/or oral presentation.

	Title	**Number of copies in the library**	**Availability via other media**
Required literature (available in the library and via other media)	1. D. A. Skoog, D. M. West, F. J. Holler and S. R. Crouch, Fundamentals of Analytical Chemistry, 9th Edition, Thompson Brooks/Cole, Belmont, USA, 2014.	1	
	2. R. Kellner, J. M. Mermet, M. Otto, M. Valcarcel and H. M. Widmer, Analytical Chemistry (A Modern Approach to Analytical Science, Second Edition), Wiley-VCHVerlag Gmbh & Co. KGaA, Weinheim, 2004.	1	
	D. C. Harris, Quantitative Chemical Analysis, W. H. Freeman and Company, 41 Madison Avenue New York, NY, 2016.	1	
	3. B. M. Tissue, Basic of Analytical Chemistry and Chemical Equilibria, John Wiley & Sons, Inc., Hoboken, New Jersey, NY, 2013.	1	

Optional literature (at the time of submission of study programme proposal)	On-line databases
Quality assurance methods that ensure the acquisition of exit competences	The monitoring of the quality and success of teaching and the acquisition of knowledge (skills) is monitored at the level of (1) teachers, accepting suggestions from students and colleagues, and (2) faculty, conducting student surveys on the quality of teaching.
Other (as the proposer wishes to add)	