



Subject card

Subject name and code	Process Analytics, PG_00048926						
Field of study	Chemistry in Construction Engineering						
Date of commencement of studies	October 2020	Academic year of realisation of subject			2023/2024		
Education level	first-cycle studies	Subject group			Optional subject group Subject group related to scientific research in the field of study		
Mode of study	Full-time studies	Mode of delivery			at the university		
Year of study	4	Language of instruction			Polish		
Semester of study	7	ECTS credits			4.0		
Learning profile	general academic profile	Assessment form			exam		
Conducting unit	Department of Analytical Chemistry -> Faculty of Chemistry						
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Błażej Kudłak					
	Teachers	dr hab. inż. Błażej Kudłak dr hab. inż. Justyna Kucińska-Lipka dr inż. Maciej Sienkiewicz					
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	20.0	0.0	20.0	0.0	10.0	50
	E-learning hours included: 0.0						
Learning activity and number of study hours	Learning activity	Participation in didactic classes included in study plan		Participation in consultation hours		Self-study	SUM
	Number of study hours	50		5.0		45.0	100
Subject objectives	Acquainting with measurements and analytical techniques used in process analysis , especially with measurements in industry						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	K6_U08	student knows how to elaborate and present research methods on basic and advanced technological processes and select instruments aimed for it			[SU5] Assessment of ability to present the results of task [SU4] Assessment of ability to use methods and tools [SU3] Assessment of ability to use knowledge gained from the subject [SU2] Assessment of ability to analyse information		
	K6_W08	student is aware of and understands technical and non-technical aspects and results of engineer activity, student has detailed knowledge on research methods and techniques especially on analytics of construction resources			[SW1] Assessment of factual knowledge		

Subject contents	<p>Lectures</p> <p>General problems. Types of measuring signals, measuring range and errors, dynamic properties. Selectivity and specificity. Response time and costs of analysis. Measuring of physical and physicochemical properties. Calibration of measuring devices.</p> <p>General characteristic of industrial measurements. Measuring of physical and chemical properties (pH, density, viscosity). Measuring of chemical composition. Problems related with sampling for continuous analysis.</p> <p>Continuous methods of analysis. Analysis of gases, liquids and solids.</p>														
Prerequisites and co-requisites	Basic knowledge of chemical analysis														
Assessment methods and criteria	<table border="1"> <thead> <tr> <th data-bbox="456 533 794 566">Subject passing criteria</th> <th data-bbox="799 533 1137 566">Passing threshold</th> <th data-bbox="1142 533 1481 566">Percentage of the final grade</th> </tr> </thead> <tbody> <tr> <td data-bbox="456 573 794 600">written exam</td> <td data-bbox="799 573 1137 600">60.0%</td> <td data-bbox="1142 573 1481 600">60.0%</td> </tr> <tr> <td data-bbox="456 607 794 633">laboratory: average tests ratings</td> <td data-bbox="799 607 1137 633">60.0%</td> <td data-bbox="1142 607 1481 633">20.0%</td> </tr> <tr> <td data-bbox="456 640 794 689">presentation and class participation</td> <td data-bbox="799 640 1137 689">60.0%</td> <td data-bbox="1142 640 1481 689">20.0%</td> </tr> </tbody> </table>			Subject passing criteria	Passing threshold	Percentage of the final grade	written exam	60.0%	60.0%	laboratory: average tests ratings	60.0%	20.0%	presentation and class participation	60.0%	20.0%
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Recommended reading	<p>Basic literature</p> <p>Supplementary literature</p> <p>eResources addresses</p>	<p>1. E. Romer, Miernictwo przemysłowe, PWN, Warszawa, 1970</p> <p>2. M. Trojanowicz, Automatykacja w analizie chemicznej, WNT, Warszawa, 1972</p> <p>3. J. Piotrowski (red), Pomiary. Czujniki i metody pomiarowe wybranych wielkości fizycznych i składu chemicznego, WNT, Warszawa, 2009</p> <p>P.N. Cheremisinoff, H.J. Perlis, Analytical measurements and instrumentation for process and pollution control, Ann Arbor Science, 1981</p> <p>Adresy na platformie eNauczenie:</p>													
Example issues/ example questions/ tasks being completed	<p>1. name what parameters/requirements should perfect analyzer have</p> <p>2. describe ranges of responsibility and competencies of engineers and chemists in the area of construction chemistry</p> <p>3. describe methods of processing, applicability, calibration of xxxxxx (group of process analyzer)</p>														
Work placement	Not applicable														