University of Gdańsk

Subject card

Subject name and code	Quantitative analysis methods in medicine and cosmetics, PG_00051163						
Field of study	Chemistry						
Date of commencement of studies	October 2026		Academic year of realisation of subject	2028/2029			
Education level	Bachelor's studies		Subject group	Optional subject group			
Mode of study	full-time studies		Mode of delivery	at the university			
Year of study	3		Language of instruction	Polish			
Semester of study	5		ECTS credits	3.0			
Learning profile	academic		Assessment form	credit			
Conducting unit							
Name and surname of lecturer (lecturers)	Subject supervisor	dr Dorota Zarzeczańska					
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	0.0	45.0	0.0	0.0	45
	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	45		8.0	22.0	75	
Subject objectives	• To familiarize students with methods of collecting and describing samples for quantitative analysis. • Presentation of the principles of quantitative determination of compounds used in cosmetics and medicine. • Discussion of advanced methods used in the quantitative analysis of organic and inorganic compounds. • Developing the ability to independently conduct complex quantitative analyzes of commercial substances.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[CHEML3_U03] Selects the appropriate equipment and laboratory apparatus for conducting uncomplicated chemical experiments.	The student selects appropriate equipment and laboratory equipment to perform specific quantitative analyses. The student is able to select and use appropriate laboratory glassware to perform quantitative analyses.	[SU1] oral statement/conversation/ discussion [SU6] demonstration of practical skills [SU8] observation of student's independent or team work
	[CHEML3_U05] Uses basic statistical methods and IT techniques to describe chemical processes and analyse experimental data.	The student analyzes experimental data using statistical methods and IT techniques. The student performs calculations needed to determine the content of substances in the analyzed preparations.	[SU2] presentation/project/paper/ report [SU8] observation of student's independent or team work
	[CHEML3_W10] Enumerates and describes the basic aspects of the construction, operation and use of measuring apparatus and equipment used in experimental works in the field of chemistry and related sciences.	The student knows the structure and operation of measuring equipment and is able to use it to conduct quantitative analyzes in the laboratory.	[SW4] test/exam - oral or written [SW1] oral statement/ conversation/discussion
	[CHEML3_U01] Identifies, analyses and solves problems in the field of broadly understood chemistry on the basis of the acquired knowledge.	The student identifies and solves analytical problems that arise during laboratory analyses.	[SU1] oral statement/conversation/ discussion
	[CHEML3_U02] Performs analyses using experimental methods and draws conclusions based on them.	The student is able to conduct quantitative analysis using experimental methods and formulate conclusions based on the obtained results. The student independently collects and prepares samples for quantitative analysis in accordance with established procedures. The student independently performs a full quantitative analysis of substances in cosmetic and pharmaceutical preparations, following the appropriate instructions and standards.	[SU8] observation of student's independent or team work
	[CHEML3_W04] Characterises the basic methods of chemical compound analysis.	The student characterizes the methods of quantitative analysis of chemical compounds and is able to apply them in laboratory practice.	[SW4] test/exam - oral or written [SW1] oral statement/ conversation/discussion
	[CHEML3_U07] Prepares documented elaboration on a specific problem in the field of selected chemical and physical issues.	The student prepares laboratory reports, documenting the course and results of quantitative analyses.	[SU2] presentation/project/paper/ report
	[CHEML3_W02] Describes the properties of elements and the most important chemical compounds, enumerates the methods of their preparation and methods of analysis.	The student is able to describe the properties of elements and chemical compounds used in cosmetics and medicine and knows the methods of their analysis.	[SW4] test/exam - oral or written
	[CHEML3_K05] Observes established procedures in laboratory work and is responsible for the safety of her/his and others' work.	The student follows occupational health and safety rules and established procedures when performing laboratory analyses. The student organizes his/her work station in the laboratory and demonstrates responsibility for its order and safety.	[SK8] observation of student's independent or team work
Subject contents	sampling, sample preparation for analysis, quantitative analysis of substances in cosmetic preparations and pharmaceuticals, alkacymetric, redoximetric, complexometric and gravimetric determinations, ion exchange chromatography.		
Prerequisites and co-requisites	Completed general chemistry and analytical chemistry courses.Using laboratory glass suitable for quantitative analysis and applying the principles of work in a chemical laboratory, using chemical calculations in the quantitative determination of substances, describing equilibria in a solution using chemical reactions, balancing oxidation-reduction reactions, theoretical basis of quantitative determinations used in analytical chemistry, ability to independently conducting basic analyzes using quantitative methods.		

<table>
<tr><td>Assessment methods and criteria</td><td colspan="2"><table>
<tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr>
<tr><td>Quantitative analyses (11) - maximum error 3%</td><td>100.0%</td><td>60.0%</td></tr>
<tr><td>Theory test</td><td>51.0%</td><td>40.0%</td></tr>
</table></td></tr>
<tr><td rowspan="3">Recommended reading</td><td>Basic literature</td><td>• J. Minczewski i Z. Marczenko, Chemia analityczna 2. PWN, Warszawa 2004;
• T. Lipiec, Z.S. Szmal, Chemia analityczna z elementami analizy instrumentalnej, PZWL, Warszawa 1996;
• A. Persona, Chemia analityczna, Podstawy klasycznej analizy ilościowej, Medyk, Warszawa 2007
• M. Jarosza Nowoczesne techniki analityczne PWN Warszawa 2006</td></tr>
<tr><td>Supplementary literature</td><td>• Z. Brzózka Miniaturyzacja w analityce chemicznej PWN 2005
• A. Cygański, Chemiczne metody analizy ilościowej, WNT
• D. Harvey, Modern Analytical Chemistry, McGraw Hill Companies, Inc</td></tr>
<tr><td>eResources addresses</td><td></td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td colspan="2"></td></tr>
<tr><td>Work placement</td><td colspan="2">Not applicable</td></tr>
</table>

Document generated electronically. Does not require a seal or signature.